

**TECHNICAL INFORMATION**

LIME

**FOR MASONRY MORTAR**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# MASONRY MORTAR

## BASIC REQUIREMENTS OF GOOD MASONRY MORTARS

Good masonry walls are expected to be water and weather resistant, and durable with a minimum of maintenance. The essential factors in obtaining such results are:

1. **GOOD MASONRY UNITS**—with rate of water absorption (suction), neither too high nor too low.
2. **GOOD WORKMANSHIP**—Full joints.
3. **GOOD MORTAR**—which is readily placeable and provides complete and uniform bond with the units by virtue of its high plasticity and water retentivity. It must be durable, weather resistant, possess adequate strength, and be economical.

Assuming a satisfactory masonry unit, then good workmanship and good mortar are so closely allied that neither can be sacrificed without jeopardizing the required results.

## FUNCTION OF LIME IN GOOD MASONRY MORTAR

A good lime, mixed in the proper proportion with portland cement, proper sand, and water, imparts the following required characteristics to masonry mortar:

**PLASTICITY**—Lime is both a cementitious and a plasticizing agent. With a given cement and sand, the plasticity of the resulting mortar will vary with the plasticity of the lime. A highly plastic lime is essential to ready placeability of the mortar for well filled

joints and water resistant walls. Plasticity is measured by the Emley Plasticimeter. The higher reading enhances the desirable characteristics.

**WATER RETENTIVITY**—Water retentivity is the ability of mortar to resist suction of the building units. A good lime imparts high water retentivity to the mortar. Mortars of high water retentivity bond more uniformly to masonry units before hardening, minimize need for retempering, thereby producing more water resistant joints and minimizing danger of efflorescence. A.S.T.M. mortar specifications require 70 per cent minimum "flow after suction" of mortar as delivered to the mason.

**ADEQUATE STRENGTH**—Strength of mortar should conform to A.S.T.M. requirements. **High lime content mortars possess adequate strength for all normal building requirements.**

### Low Cost—

- (a) Mortars having the above characteristics are conducive to rapid, easy, economical, and neat workmanship.
- (b) Minimum droppings—Minimum mortar waste.
- (c) Low maintenance cost.
- (d) Mortars are proportioned on a volume basis. A 50 lb. bag of hydrated lime contains approximately  $1\frac{1}{4}$  cubic feet. A mortar mix of one bag of portland cement, two bags of lime and nine cubic feet of sand (1:2½:9) is one of the most economical mortars complying with the characteristics described above.

"MORTASEAL"® and "RED TOP"® are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "MORTASEAL" identifies the particular hydrated lime; "RED TOP" identifies the particular hydrate or high calcium quicklime and other building products manufactured only by United States Gypsum.



A good mortar spreads easily and resists suction of brick.



A plastic mortar flows with light pressure and encourages good workmanship.



Harsh mortar is conducive to poor workmanship and unfilled joints.



Good mortar encourages good workmanship and well filled joints.

# LIME FOR MASONRY MORTAR

## MORTASEAL\*

### DESCRIPTION

MORTASEAL (Genoa, Ohio Mill) is a double hydrated Ohio dolomitic lime, and MORTASEAL (Farnams, Mass. Mill) is a quick-soaking, hydrated, high calcium lime (both less than 8 per cent unhydrated oxides). They meet the following specifications: A.S.T.M. C207-49, Type S; Federal Specifications SS-L-351, Type M, (also Type F though not designated as a finishing lime), including the added requirement of not more than 8% unhydrated oxides; National Lime Association Type S.

### FUNCTION AND UTILITY

MORTASEAL lime qualifies most readily with all "Functions of Lime in good Masonry Mortar" described on preceding page as follows:

**Plasticity**—MORTASEAL develops exceptional plasticity and workability immediately upon mixing with water—either by machine or by hand. Emley Plasticity of MORTASEAL is 250 to 400. This permits a mortar of exceptional working qualities that is conducive to good workmanship and water resistant joints.

Eliminates soaking or slaking of lime.

**High Water Retentivity**—Mortar mixes of 1:2½:9 with MORTASEAL lime, as shown in data table, produced the unusually high "flow after suction" (resistance to suction) of 93 per cent.

(a) Facilitates better filling of masonry joints regardless of high or uneven suction.

(b) Conducive to a more complete, strong, uniform bond with masonry units.

(c) Decreases need for retempering.

**Low Volume Change**—Because of the 92 per cent hydration of MORTASEAL, volume change due to "unsound" material is negligible.

**Ease of Mixing**—MORTASEAL lime requires no soaking or slaking; is placed in mixer in dry state, direct from containers.

**ADEQUATE STRENGTH: A 1:2½:9 mix of portland cement, MORTASEAL and sand complied with A.S.T.M. strength requirements for Type B mortar (750 pounds per square inch at 28 days). See Data below.**

**Lower in Cost** because:

(a) No soaking or slaking required.

(b) High sand-carrying capacity.

(c) Minimum labor required to mix or apply.

(d) Less need to retemper.

(e) Less need to wet masonry units.

(f) A 1:2½:9 MORTASEAL mix is one of the lowest cost mortars.

### AVAILABILITY

Available east of the Rocky Mountains.

### LIMITATIONS OF USE

None.

MASONRY MORTAR DATA													
SPECIFICATIONS FOR MORTAR FOR UNIT MASONRY													
REQUIREMENTS OF ASTM DESIGNATION C270-51T						AVERAGE TEST RESULTS USING USG LIMES							
Standards  Mortar Types	Property Specifications		Proportion Specification			Job Mixes on Volume Basis	MORTASEAL		Red Top Masons Hydrate		Red Top Masons Quicklimes		
	Minimum Aver. Comp. Strength psi 28 Days	Flow After Suction Percent Minimum	Portland Cement (1)	Lime (2)	Sand (3)		Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction	
A-1	2500	70	1	¼	2.8 to 3¾	1:¼ :3¾	4924	69.0	3976	59.1	Not Tested	66.7	
A-2	1800	70	1	¼ to ½	2.8 to 4½	1:½ :4½	3154	70.4	←	Not	Tested	→	
B	750	70	1	½ to 1¼	3.4 to 6¾	1:1¼ :6	2150	90.6	1924	75.7	1370	82.5	
						1:1¼ :6¾	1750	78.0	←	Not	Tested	→	
C	350	70	1	1¼ to 2½	5.1 to 10½	1:2½ :9	868	93.3	786	83.2	915	84.9	
						1:2½ :10½	663	78.0	←	Not	Tested	→	
D	75	70	1	2½ to 4	7.9 to 15	1:4:15	203	88.3	110	76.6	Not Tested	82.0	

CONCLUSIONS:

A 1:½:4½ mortar with MORTASEAL complied with Type A-1 Property Specifications.

A 1:1¼:6 mortar with MORTASEAL or RED TOP Masons Hydrate complied with Type A-2 Property Specifications.

A 1:2½:9 mortar with MORTASEAL RED TOP Masons Hydrate or RED TOP Quicklime complied with Type B Property Specifications.

NOTES:

(1) PORTLAND CEMENT—To comply with ASTM Designation C150, Type I, II or III; or ASTM Designation C175, Type IA, IIA, or IIIA.

(2) LIME—To comply with ASTM Designation C5 (Quicklime) or ASTM Designation C207 (Hydrated) Type N or S.

(3) SAND AGGREGATE—To comply with ASTM Designation C144 and to be not less than 2¼ and not more than 3 times the sum of the volumes of the cement and lime used, measured in a damp and loose condition.

(4) Based on mortars as delivered to mason having initial flows between 100 and 115%.

# LIME FOR MASONRY MORTAR

## RED TOP\* MASONS HYDRATED LIME

### DESCRIPTION

A normal hydrated lime, either dolomitic (less than 92 per cent hydration) or high calcium, for use in masonry mortar. Conforms with A.S.T.M. C207-49, Type N; Federal SS-L-351, Type M; National Lime Association Type N.

### FUNCTION AND UTILITY

**Plasticity**—Properly soaked masons hydrated lime has an Emley Plasticity of 150-200, sufficiently high to be conducive to water resistant joints and easy-working mortar.

**Water Retentivity**—"Flow after suction" with a 1:1¼:6 and 1:2½:9 mix was found to exceed 70 per cent, adequate to insure a mortar of good bonding strength and adhesion and of sufficient workability to permit complete filling of joints. A 70 per cent value complies with ASTM standard minimum property requirement for water retentivity.

**Low Volume Change.**

**Adequate Strength.**

### AVAILABILITY

Nationwide.

### LIMITATIONS

1. Must be soaked overnight to develop maximum plasticity.

## RED TOP MASONS QUICKLIME

### DESCRIPTION

RED TOP high calcium quicklime is manufactured in both pulverized or pebble form. Conforms with A.S.T.M. C5-26; Federal Specifications SS-Q-351.

### FUNCTION AND UTILITY

**Properly slaked and aged**, yields a putty which greatly enhances:

(a) Plasticity (300-500 Emley).

(b) Water retentivity approximately 85 per cent obtained for a 1:2½:9 mix.

(c) Workability for water resistant walls.

**High Yield**—Produces over 50 per cent more putty volume than hydrated lime.

**Adequate Strength.**

### LIMITATIONS

1. For best results, quicklime must be of recent manufacture to avoid air slaking in container.

2. Must be handled carefully to avoid burning.

3. Extra slaking and aging time and equipment required.

4. Must be properly slaked and aged.

## SPECIFICATIONS

(The following are offered as desirable inclusions in any masonry specification, and are not intended as a complete section covering Masonry Specifications.)

### GENERAL PROVISIONS

All masonry materials shall be heated to a temperature such that they will remain above 35° F. until they have been placed and suitably protected.

Masonry shall be protected against freezing for at least 48 hours after placing. Unless such precautions against freezing are taken, no masonry shall be built when temperature is below 32° F. on a rising temperature, or below 40° F. on a falling temperature. No masonry shall be laid on walls that are frozen or contain frost.

### MORTAR MATERIALS

**Lime**—shall be: (*select one*)

(MORTASEAL)

(RED TOP MASONS Hydrated Lime)

(RED TOP MASONS Quicklime)

manufactured by United States Gypsum Company.

**Portland Cement**—shall conform to (Federal Specification SS-C-192 Type 1) (ASTM C150-47 Type 1).

**Sand**—shall conform to Specifications for Aggregate for Masonry Mortar, ASTM C144-44.

**Water**—used in mixing mortar shall be clean and free from deleterious amounts of acids, alkalies or organic materials.

### LIME PREPARATION (*select one*)

(MORTASEAL shall be mixed without soaking or slaking.)

(RED TOP MASONS Hydrated Lime shall be soaked at least 16 hours before using.)

(RED TOP MASONS Quicklime shall be slaked and aged for at least 16 hours, or until the putty temperature is 80° F. or less.)

### MORTAR MIX

**1. Above Grade**—Mortar made from materials complying with the above specifications shall be mixed in proportion of one bag portland cement, two bags lime (or two and one half cubic feet quicklime putty), to not more than nine cubic feet sand (1:2½:9).

**2. Below Grade**—Mortar made from materials complying with these specifications shall be mixed in proportion of one bag portland cement, one bag lime (or one and one quarter cubic feet quicklime putty), to not more than six cubic feet of sand (1:1¼:6).

### 3. Specialized Uses—

(a) For extra-strength, reduce proportion of sand (i.e. 1:2½:8 or 1:1¼:5, but not less than 1:2:6¾ or 1:1:4½).

(b) For extreme strength or under excessive moisture conditions, reduce lime content (viz. 1:1/4:3).

(c) For glass block, use 1:1:5 mix.

(d) For power plant chimneys, use 1:2:5 mix.

(e) For ceramic tile, use 1:1:6 mix.

(f) For gypsum tile, use one part RED TOP Partition Tile Cement and three parts sand by weight.

### WORKMANSHIP

**Note to Architect:** Detailed workmanship specifications will vary, depending on type of job and building units involved. However, it is suggested that on all masonry work, the following be incorporated:

1. Mortar shall be laid in a uniform bed without furrows and all joints shall be completely filled. Sufficient mortar shall be placed in mortar beds and in head and collar joints to completely fill all spaces between masonry units.

2. Highly absorbent brick shall be wetted (not soaked) before laying.

3. Mortar materials shall be accurately proportioned and thoroughly mixed. Retempering with additional water shall be kept to a minimum. Mortar which has been mixed for more than 2 hours shall be discarded.

\*Trademark Reg. U. S. Pat. Off.

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ARCHITECT SERVICE DEPT.

**TECHNICAL INFORMATION**

# USG<sup>®</sup> METAL EDGE GYPSUM PLANK

## ROOF DECK



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG\* METAL EDGE GYPSUM PLANK

## DESCRIPTION

Metal Edge Gypsum Plank is a precast structural roof deck unit reinforced on all 4 edges with 21 gauge galvanized sheet steel, formed into tongues and grooves. In addition, it is integrally reinforced with 16 gauge galvanized, electrically welded steel mat.

Size—2" x 15" x 10'0". Covers 12.5 sq. ft.  
Weight—13 lbs. per sq. ft.  
Maximum span—7'0".  
Maximum Safe Load—75 lbs. per sq. ft.  
Maximum Cantilever—3'2" with 45 psf total load.



## FUNCTION AND UTILITY

### TONGUE AND GROOVE INTERLOCKING EDGES.

The accurately formed tongues and grooves on all sides and ends interlock with adjacent plank, thus distributing the load. Tongue and groove edges permit ends of plank to occur off supports. Solid bearing is provided over every support regardless of inaccurate spacing or warpage of purlins or joists.

### LIGHT WEIGHT

Only 13 pounds per square foot. Saving in dead load, saves structural steel.

### FIREPROOF

Will not support combustion. The gypsum will resist high temperatures until fully calcined, a very slow process.

### STRONG

Used for roof deck the maximum recommended span is 7'0" which permits a safe super imposed load of 75 lbs. per sq. ft., uniformly distributed.

### UPLIFT RESISTANCE

The No. 91 Clip used to attach the deck to purlins will resist uplift forces up to 474 lbs. per clip and horizontal forces up to 2100 lbs. per clip.

### ADAPTABLE

Applicable principally to flat or pitched roofs with true planes up to 30°. Can also be applied to curved or warped areas where the radius of the curve is more than 150 feet.

### EASE OF ERECTION

Large units with accurately formed metal tongues and grooves mesh and interlock readily, for fast and easy erection.

### NAILABLE

The dense hard gypsum provides good nail holding power (for light weight shingles, etc.) See Technical Data tables below.

### WINTER CONSTRUCTION

Since the units are precast and laid without grout, many winter delays are avoided.

### LOW IN COST

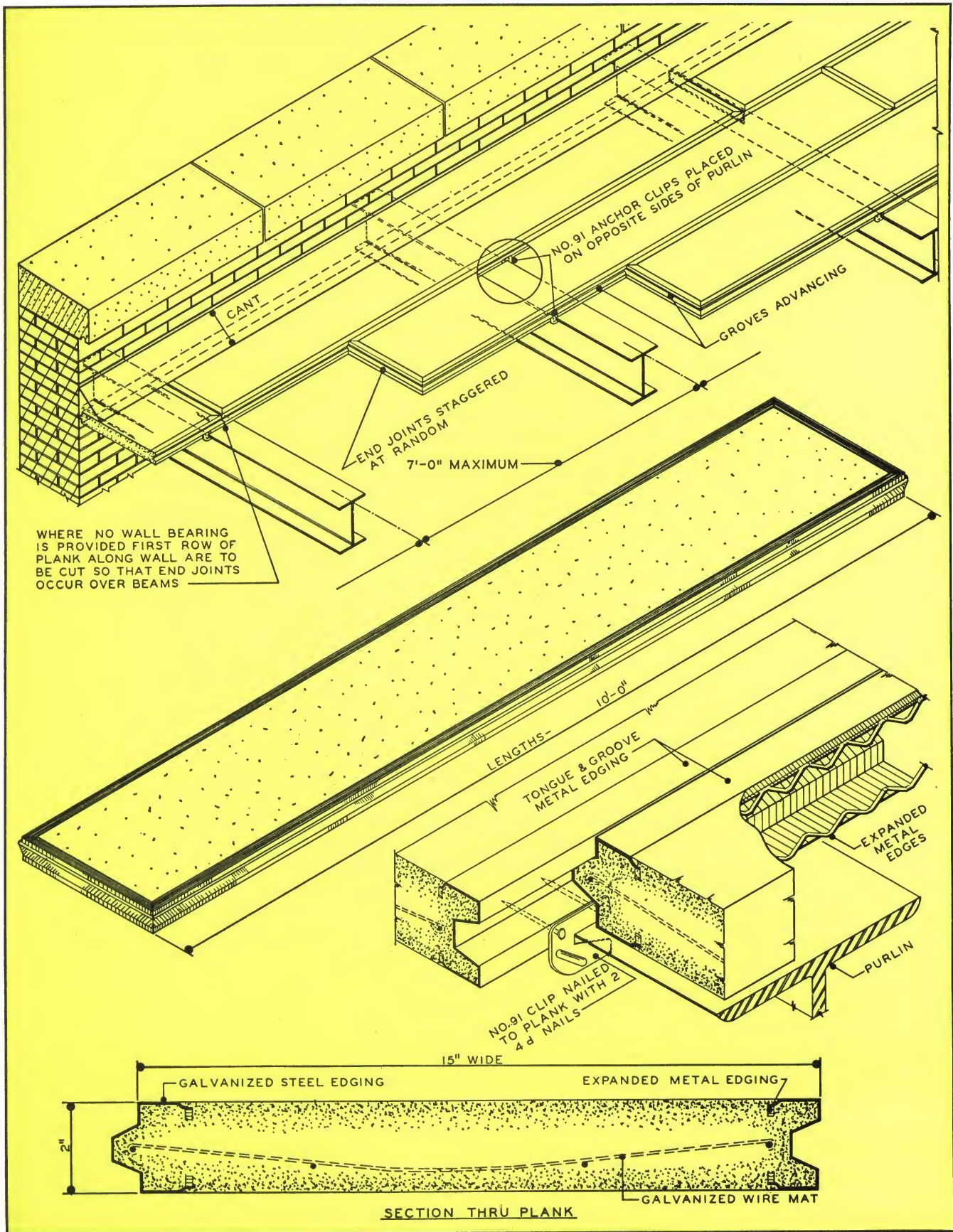
Both material and labor costs are low.

Nail Holding Power of Gypsum		Thermal Insulation Values	
Description of Nail	Holding Power of dry slab. 1½" Penetration. lbs. per Nail.	"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)	
1¾" LaBelle Square Cut	150 lbs.	Plank without added insulation—0.53 Btu	
1½" Galvanized Roofing Nail	71 lbs.	Plank with ½" added insulation—0.29 Btu	
		Plank with 1" added insulation—0.20 Btu	
		Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .32 to .33.	

"USG", "PYROFILL" is a registered trademark owned by United States Gypsum, used by it to distinguish its product.  
"PYROFILL" identifies the particular gypsum fiber concrete manufactured only by United States Gypsum.

\*Trademark Reg. U. S. Pat. Off.

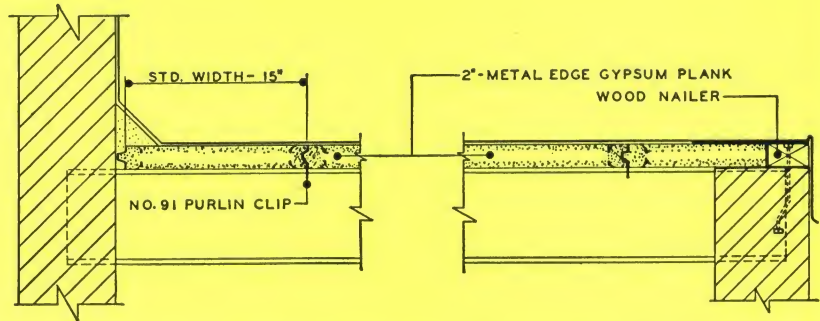
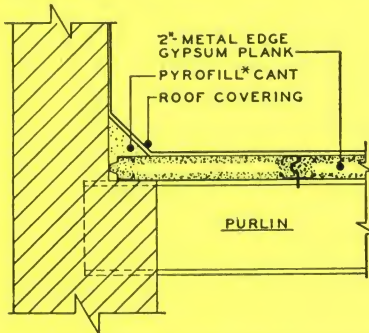
# USG METAL EDGE GYPSUM PLANK



# USG METAL EDGE GYPSUM PLANK

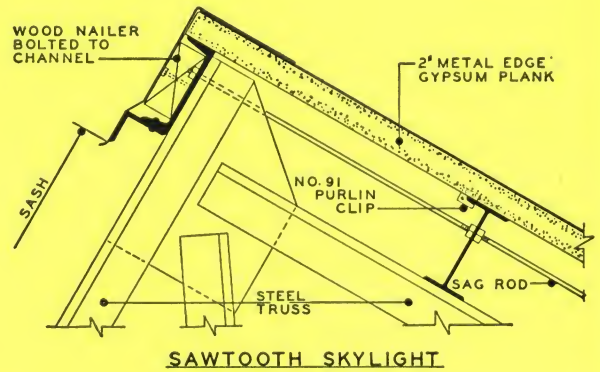
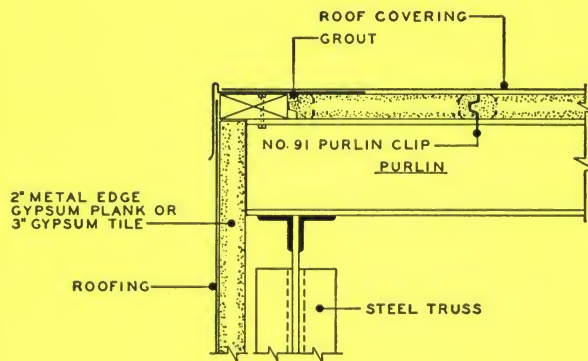
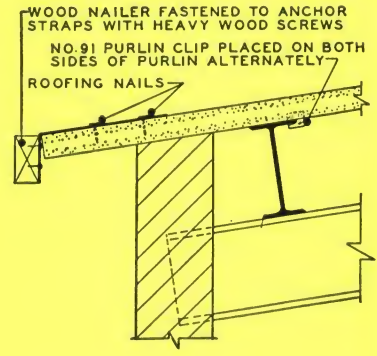
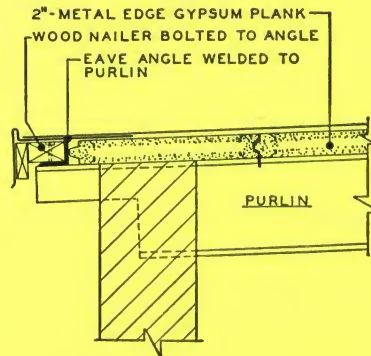
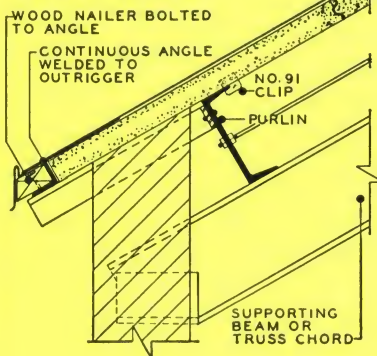
## PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"



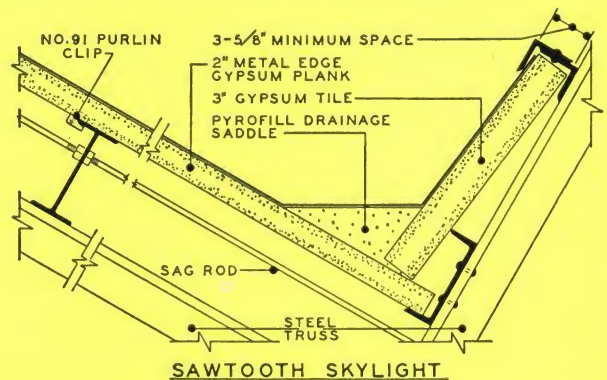
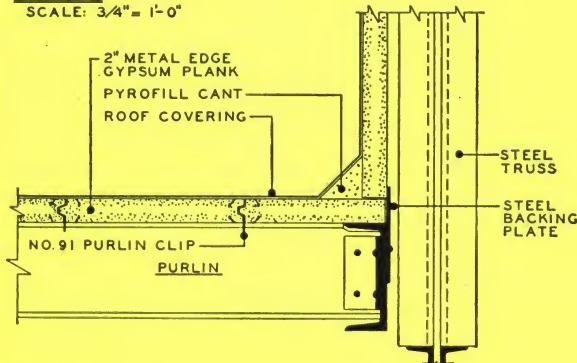
## EAVES

SCALE: 3/4" = 1'-0"



## CURBS

SCALE: 3/4" = 1'-0"



U.S. PAT. OFF. REG. T.M.

# USG METAL EDGE GYPSUM PLANK

## DIRECTIONS FOR HANDLING AND ERECTING

### SHIPPING

Plank will be loaded in the car or truck on edge and stacked with spacers between tiers or rows, straw or other protecting fillers will be used at sides and ends of cars and the materials braced or tied to prevent shifting.

### UNLOADING AND HANDLING

Plank shall be unloaded and handled on edge. Handling on edge prevents cracking and insures a sound plank at the point of installation on the roof deck.

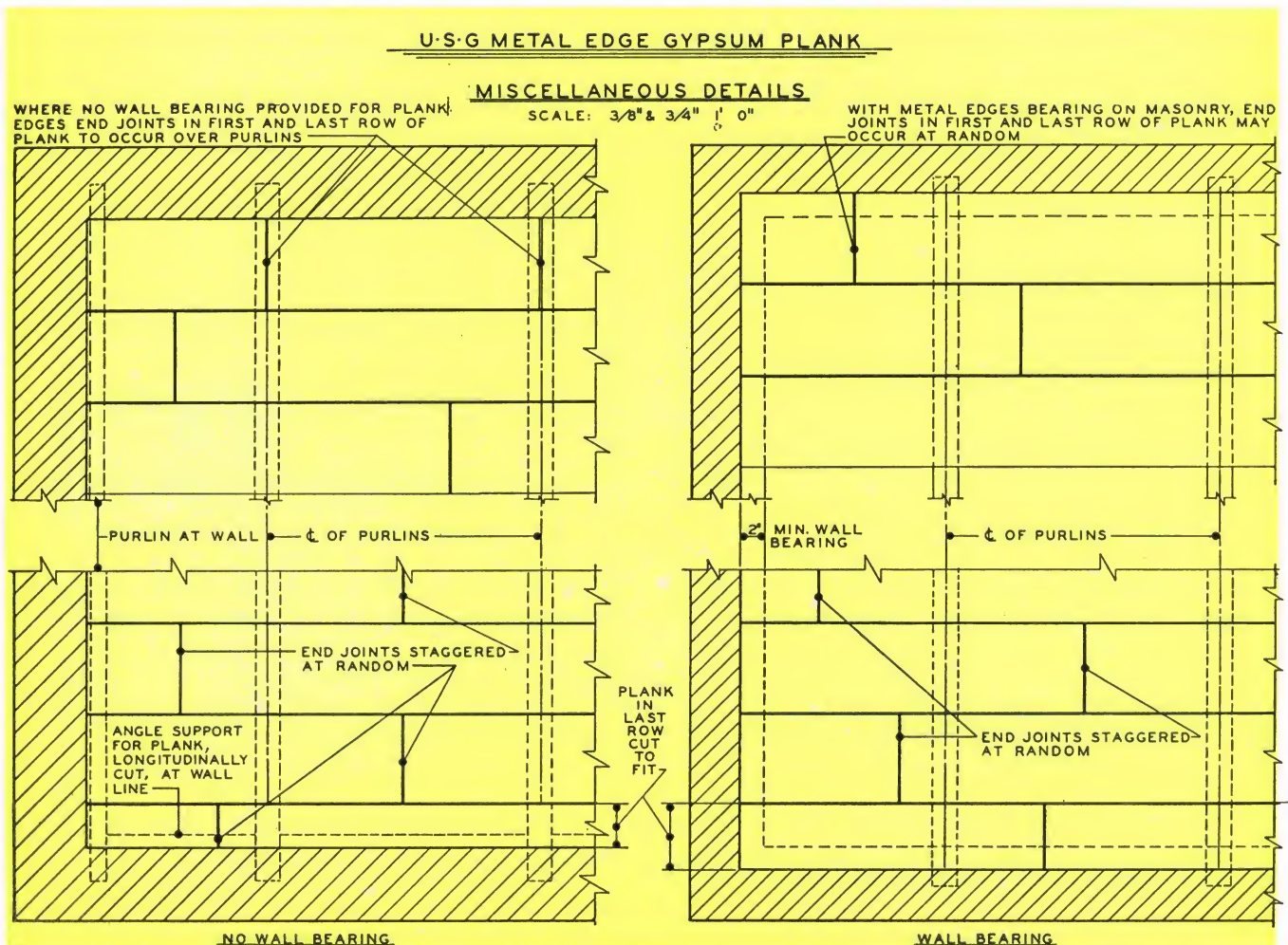
### STORAGE

When Plank are not taken direct from the car to the roof deck for installation, job storage is necessary and the following is recommended for best results:

- Select reasonably level ground with adequate drainage. Place two 4" x 4" wood runners on the ground spaced approximately 5'0" apart. Provide braced posts or other adequate support at each end of pile, to keep tile in vertical position.

- Pile tile on edge and keep as perpendicular as possible at all times. As tile are being piled they should be spaced apart at about every 8 or 10 tile with  $\frac{1}{2}$ " gypsum board dunnage or wood spacers to provide some ventilation through the pile.
- When the first tier (row) is completed place two 2" x 4's flat to correspond with the 4" x 4" at the bottom and build the second tier in like manner.
- On top of the second tier, lay another set of 2" x 4" strips laid flat to complete a pile of not more than three tiers high.
- Cover the storage pile with a tarpaulin, waterproof paper or other rain shed supported above and clear of top sides and ends so that ventilation around and through the tile is possible at all times.

(See following page)



# USG METAL EDGE GYPSUM PLANK

## DIRECTIONS FOR HANDLING AND ERECTING (con't)

### ERECTING

#### Hoisting

Plank shall be hoisted to the roof level on edges in strap slings or on lifts and kept on edge as much as possible.

#### Starting Point

It is customary to start at one corner, usually the lowest corner, of each independent roof area to be covered.

#### First Plank

The first plank must be laid so that the side marked "*This side up*" is up. This plank must also be laid so that the groove is advancing.

Fit the first plank as close as possible to the wall or eave yet keep in a true line with the row that is to be laid, so that all succeeding plank and/or rows may be tightly interlocked with closed joints.

#### Supports

The outside edge of all starting or final rows of roof tile must be supported or special precautions taken.

- a. When *no wall or purlin support* is provided along the longitudinal edge of the plank, the plank shall be cut so that *end joints will occur over purlins*. We suggest cutting the tongue end of one plank and the groove end of another, to provide right and left cut ends for both starting and completing subsequent rows. *For the final row, if the plank must be cut longitudinally to fit the closing space, we recommend using a suitable steel angle support under the cut edge.*
- b. When there is a *wall or purlin support* along the longitudinal edge of the starting or final row, of the plank, they are laid continuously.

#### First Row

After the first plank is in place as described above, complete laying plank in the first row by matching or abutting ends and cutting last plank to fit as required.

#### Anchorage

As each plank is laid, it shall be anchored to the roof purlins at each intersection in one of the following ways.

- a. Plank laid over *Steel I beams or Bar Joists* having flat flanged top members shall be anchored with a 16 gauge galvanized metal clip (No. 91 Purlin Clip) furnished by the United States Gypsum Co. Two 4 penny galv. slater nails, or 1" smooth shank No. 11 galv. roofing nails, 4 penny cement coated nails, or similar are required with each clip. Nails are not furnished with the clips by the United States Gypsum Co. For good lateral stiffening of the roof deck it is recommended that the clips be alternately attached on the right and left sides of successive purlins.
- b. *Steel Purlins*—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- c. *Other Type Purlins*—When clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.

d. *Concrete Joists*—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.

e. *Wood Joists*—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.

f. *Slopes over 30° on steel framing*—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

#### Cutting

Plank are cut on the job to fit as required. Plank may be cut by hand or with a power saw, as follows:

- a. When cutting by hand, first cut through the metal edging with a 12" 18 gauge 14 tooth power hacksaw blade fixed in a Millers Falls type hacksaw frame No. 14½ and then cut the gypsum with an ordinary (carpenters) saw.
- b. Metal Edge Plank can be readily and economically cut with power driven saws. Use metal or masonry cutting blades as recommended by saw manufacturers. ¼" steel cored carborundum blades, 12" in diameter or carbide tipped blades are often used.

#### Second Row

The second row and subsequent rows are to be installed by starting with a full or fractional length tile that will permit end joints to be staggered at least 30" with relation to the end joints of the adjacent row. Continue the row using full length planks with ends tightly matched and finish the row with a full or fractional length plank as required.

#### Ridges and Hips

Fill joints at ridges and hips with mortar consisting of gypsum grouting cement and sand mixed in proportion of 1 part cement to two parts clean sharp sand by volume.

#### Curved Roofs

While gypsum plank do not readily lend themselves to application over curved roofs, they can be installed on curves when the radius of the curve is 150 feet or greater.

#### Repairing

If necessary to repair broken or damaged tile after installation, knock out all broken gypsum (leaving reinforcing mesh in place) and support a form below. Then pour the void full using moulding plaster, mixed with water only. Screed smooth.

#### Cants and Drainage Fills

Cant strips and drainage fills can be formed in place, using a gypsum fiber concrete mixed on the job adding water only. Use only gypsum fiber concrete over U S G gypsum plank.

# USG METAL EDGE GYPSUM PLANK

## RECOMMENDATIONS & LIMITATIONS OF USE

### JOB PROTECTION

During job storage, gypsum plank should be protected from exposure to rain and snow. Roof covering should be applied as soon as possible after installation of the plank. Handle and store on edge.

### ROOF COVERING

Apply built up roofing in accordance with the roofing manufacturer's specifications. We recommend application of roofing to Metal Edge Gypsum Plank by nailing the first sheet dry using nails providing a minimum penetration of  $1\frac{1}{2}$ " into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank.

### EXCESSIVE MOISTURE

Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

### HIGH TEMPERATURE

Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

### STEEP ROOFS

We recommend using USG 3" Short Span (nailing type) gypsum roof tile on roof pitches over  $30^\circ$ .

### VENTING OF ENCLOSED SPACES

All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Ventilating Engineers for complete information on venting of attic spaces (Chapters 10 & 12).



Handling



Cutting



Placing



Anchoring

# USG METAL EDGE GYPSUM PLANK

## SPECIFICATIONS

### SCOPE OF WORK

The contractor shall furnish all material, labor and equipment and install complete USG Metal Edge Gypsum Plank as shown and specified for Roof Deck.

All curbs, cants, saddles, etc., shall be installed as shown or specified herein.

### MATERIALS

#### METAL EDGE GYPSUM PLANK

Material shall be 2" x 15" x 10'-0" as manufactured by United States Gypsum Company.

#### CLIPS AND NAILS

The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1" smooth shank No. 11 ga. galvanized roofing nails.

#### CANTS AND SADDLES

Form from PYROFILL Gypsum Fiber Concrete manufactured by United States Gypsum Company.

#### CURB TILE

Use 3" solid precast Gypsum Roof Tile manufactured by United States Gypsum Company.

### ERECTION

#### PLACING OF PLANK

Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one

support.

Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

#### ANCHORAGE OF PLANK TO SUPPORTS

Each plank shall be anchored to supporting members by the following method:

- a. Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.
- b. Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- c. Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.
- d. Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- e. Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- f. Slopes over 30° on steel framing—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

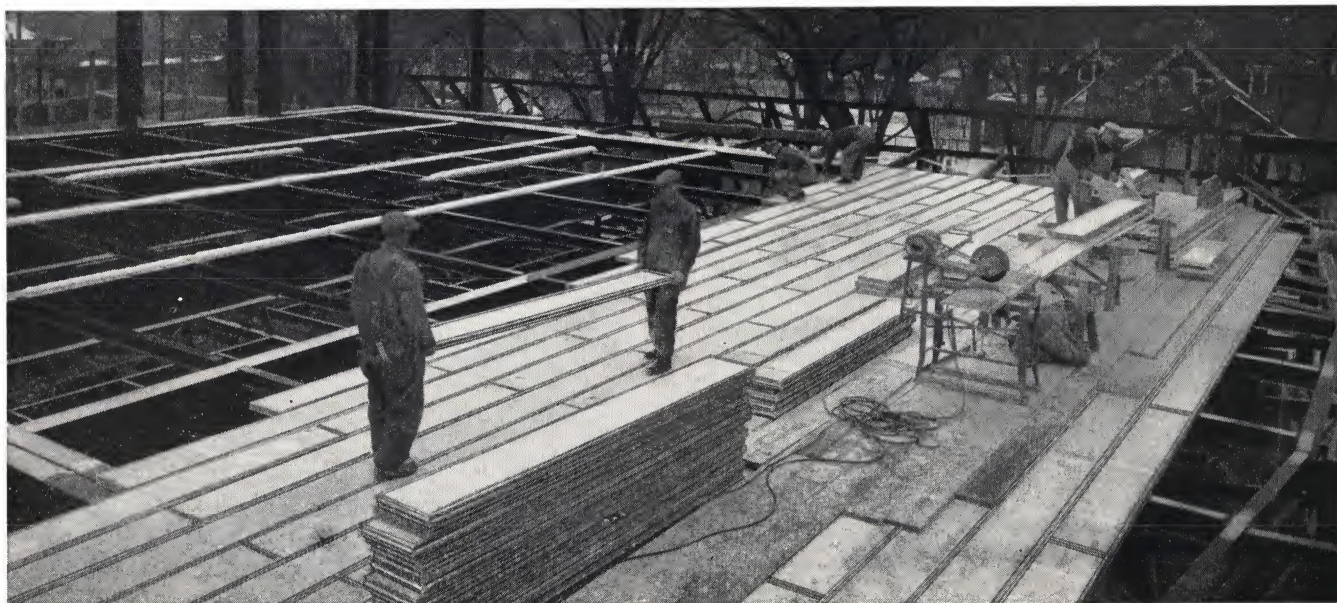
#### SPECIAL FORMING

##### RIDGES AND HIPS

Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

##### CANTS AND DRAINAGE FILLS

All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed as with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.



**TECHNICAL INFORMATION**

# GYPSUM ROOF TILE

## **THREE-INCH SHORT SPAN**

**(NAILING TYPE)**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# 3" SHORT SPAN (NAILING TYPE) GYPSUM ROOF TILE

## DESCRIPTION

3" Short Span (Nailing Type) Gypsum Roof Tile are precast, solid, reinforced gypsum roof deck units, usually supported by steel tee sub-purlins. A grouting groove along top edges is provided.

**Size**—3" x 12" x 30".

## FUNCTION AND UTILITY

**Nail-Holding Power.** These slabs are cast from a dense, hard gypsum, to give maximum nail-holding power in a low cost nailing type deck. (See Technical Data Tables for various nail holding values.)

**Fireproof.** Composed almost entirely of gypsum, these units will not burn and they will not transmit high temperatures until completely calcined—a very slow process.

**Strong.** 3" Short Span (Nailing Type) Gypsum Roof Tile will safely support a load of over 100 pounds per sq. ft., uniformly distributed. The size of sub-purlins is usually determined by the design load which seldom exceeds 60 pounds per sq. ft. The sub-purlins, welded to roof members, give bracing strength and rigidity to the frame. See Technical Data for sub-purlin sizes.

**Light Weight.** Only 17 pounds per square foot exclusive of sub-purlins. Light dead load saves structural steel.

**Insulation Value.** The resistance<sup>®</sup> factor of .42 per inch of thickness of 3" Short Span Gypsum Roof Tile provides a U-factor of .30 for a typical construction with a vented air space and a suspended metal lath and plaster ceiling; the addition of 2 inches of mineral wool insulation above the suspended ceiling reduces the U-factor to .09.

## Adaptable.

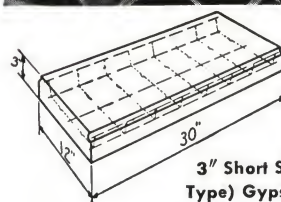
(a) 3" Short Span Gypsum Roof Tile are designed especially for pitched roof decks but are adaptable to flat or slightly curved or warped surfaces as well.

(b) *Winter construction.* Since units are precast, requiring little grout (after deck is in place), many winter delays are avoided.

(c) *Speed of erection.* Convenient size and weight of tile make possible fast erection.

## RECOMMENDATIONS & LIMITATIONS OF USE

**Job Protection.** Store on edge, off the ground and cover to keep dry.



3" Short Span (Nailing Type) Gypsum Roof Tile

**Roof Covering.** Apply roof covering as soon as possible after installation of gypsum roof tile. See table of nail holding values, this page, for aid in selection to suit job requirements. Seamed type sheet metal coverings are applied with attachments (cleats or strips) anchored by bolting entirely through the roof deck.

**High Humidity—High Temperature.** 3" Short Span Gypsum Roof Tile are designed for use on buildings having normal humidity and temperature conditions. Where high humidity conditions are anticipated, such as in wet processing plants, or where high temperatures prevail, such as in foundries, or near uninsulated furnaces or breechings, consult the nearest USG sales office for recommendations.

**Venting of Enclosed Space.** All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published by the American Society of Heating and Ventilating Engineers for information on venting of attic spaces (Chapters 10 & 12).

TECHNICAL DATA TABLES						STEEL SUB-PURLINS									
NAIL HOLDING VALUES FOR 3" GYPSUM TILE Resistance to direct pull in pounds per nail for penetration shown						BASED ON TOTAL ROOF LOAD OF 55 POUNDS PER SQ. FT.									
						BULB-T-Sub-Purlins						Allowable Spans			
						TYPE	SPACING	5"3	Weight Pounds Per ft.	Weight Pounds per sq. ft.	Tile End Bearing"	Horizontal Projection			
fs 20,000 psi															
						1/2 WL	1/8 WL	1/10 WL							
TYPE OF NAIL	La Belle Square Cut Nails (Wheeling)				Wire Nail										
	5 Penny	6 Penny	7 Penny	6 Penny											
	Shingle	Common	Cornice	Common	Special										
Finish	Galv.	Galv.	Galv.	Galv.	Cement Coated	1480 (B)	2'-6 3/4"	.173	1.55	.60	.375	⊗1'-9"	⊗3'-6"	4'-3"	
Lengths	1 1/4"	2"	2"	2 1/4"	2 1/4"	3158-X (W)	2'-6 3/4"	.161	1.45	.57	.344	1'-11"	3'-11"	4'-4"	
						158 (I)	2'-6 3/4"	.165	1.50	.58	.406	⊗1'-11"	⊗3'-11"	4'-5"	
Penetration	1 1/2"	1 3/4"	1 3/4"	2"	1 3/4"	1680 (B)	2'-6 3/4"	.261	2.00	.78	.438	⊗2'-3"	⊗4'-9"	5'-6"	
						168 (I)	2'-6 3/4"	.240	2.00	.78	.438	⊗2'-3"	4'-9"	5'-4"	
Nail Holding Power in Pounds per Nail in Dry Tile	150.5	267.0	273.0	323.0	175.0	3168 (W)	2'-6 3/4"	.240	2.00	.78	.438	⊗2'-3"	4'-9"	5'-4"	
						3178 (W)	2'-6 3/4"	.324	2.47	.96	.625	⊗2'-7"	⊗5'-6"	6'-2"	
						1780 (B)	2'-6 3/4"	.332	2.40	.94	.563	⊗2'-6"	⊗5'-5"	6'-3"	
						178 (I)	2'-6 3/4"	.340	2.50	.98	.575	⊗2'-6"	⊗5'-6"	6'-4"	
						200 (I)	2'-6 3/4"	.460	3.00	1.17	.657	⊗2'-10"	⊗6'-2"	⊗7'-2"	
						3218 (W)	2'-6 3/4"	.472	3.01	1.17	.657	⊗3'-0"	⊗6'-4"	7'-6"	
						2180 (B)	2'-7"	.518	3.05	1.18	.500	⊗3'-0"	⊗6'-5"	⊗7'-6"	
						214 (B)	2'-6 3/4"	.494	3.20	1.24	.813	⊗3'-2"	⊗6'-9"	7'-9"	
						2140 (B)	2'-7"	.639	3.65	1.41	.688	⊗3'-4"	⊗7'-1"	⊗8'-4"	
						3228 (W)	2'-7"	.738	3.65	1.41	.500	⊗3'-6"	⊗7'-3"	⊗8'-7"	
						3258 (W)	2'-7"	1.050	4.67	1.80	.625	⊗4'-1"	⊗9'-6"	⊗10'-2"	
NOTES: 1. Values are from tests conducted by USG Research Laboratory.						⊗ Limited By Deflection — 1/240 of Span—For 1/360 Reduce Span By 1-1/4" Per Foot of Span.									
2. Nails were driven by hand with a hammer, then immediately withdrawn by means of a weighted lever arm.						1/2 WL — Cantilever Beam—Uniformly Distributed Load. (Leave Overhang.)									
3. The dry density of the gypsum tile was approximately 68 pounds per cubic foot.						1/8 WL — Simple Beam—Uniformly Distributed Load.									
						1/10 WL — Three Spans—End Bays—Uniformly Distributed Load.									
						Design Load 55 pounds sq. ft.									
						NOTE: Properties shown are taken from data furnished by manufacturer indicated above.									

"PYROFILL", "PYROBAR" and "PYROCELL" are registered trademarks owned by United States Gypsum, used by it to distinguish its products.

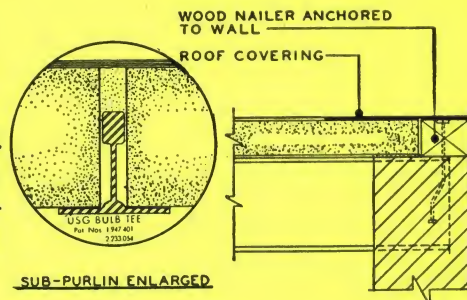
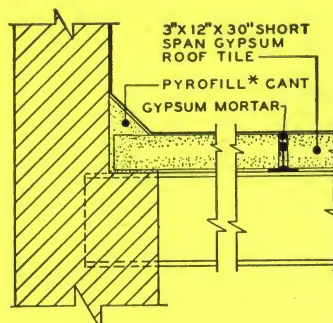
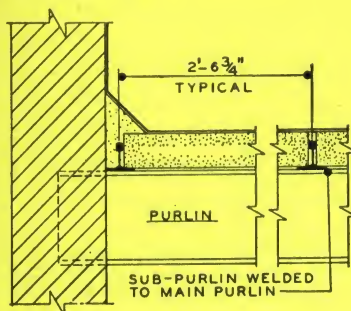
"PYROFILL" and "PYROCELL" identify the particular gypsum fiber cements and "PYROBAR" identifies the particular gypsum tile manufactured only by United States Gypsum.

ACD-4 United States Gypsum Company

# 3" SHORT SPAN (NAILING TYPE) GYPSUM ROOF TILE

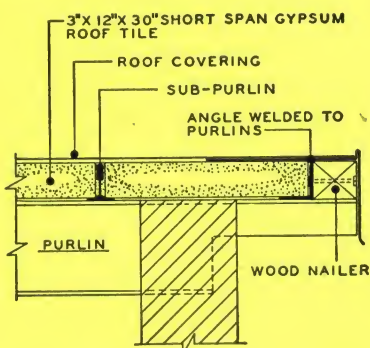
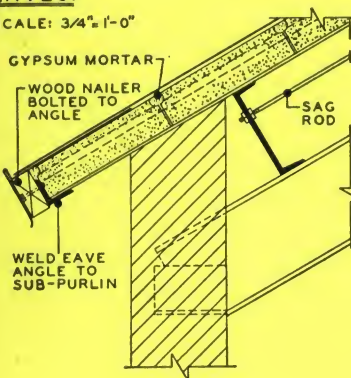
## PARAPET & END WALLS:

SCALE: 3/4" = 1'-0"

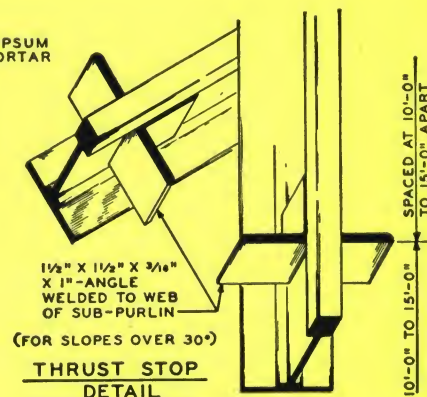
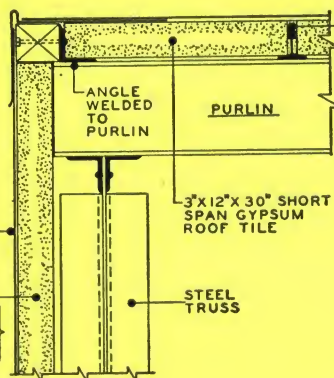
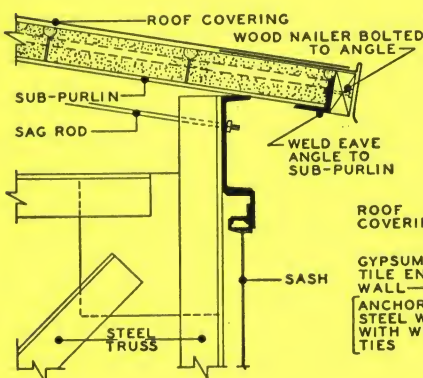
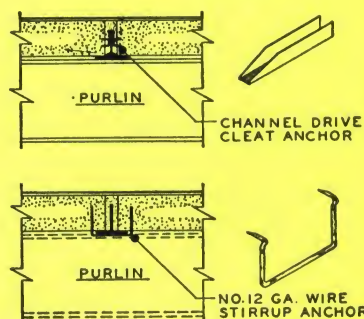


## EAVES:

SCALE: 3/4" = 1'-0"

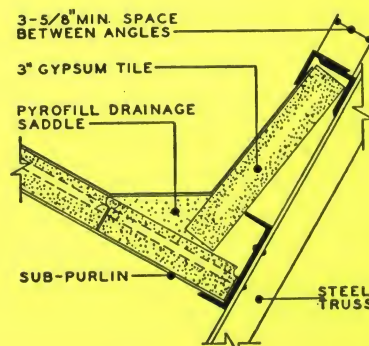
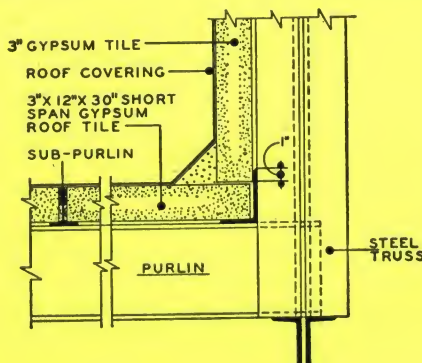
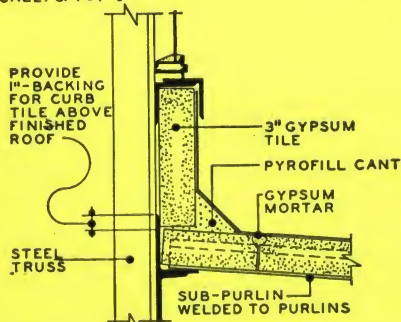


## ANCHORAGE

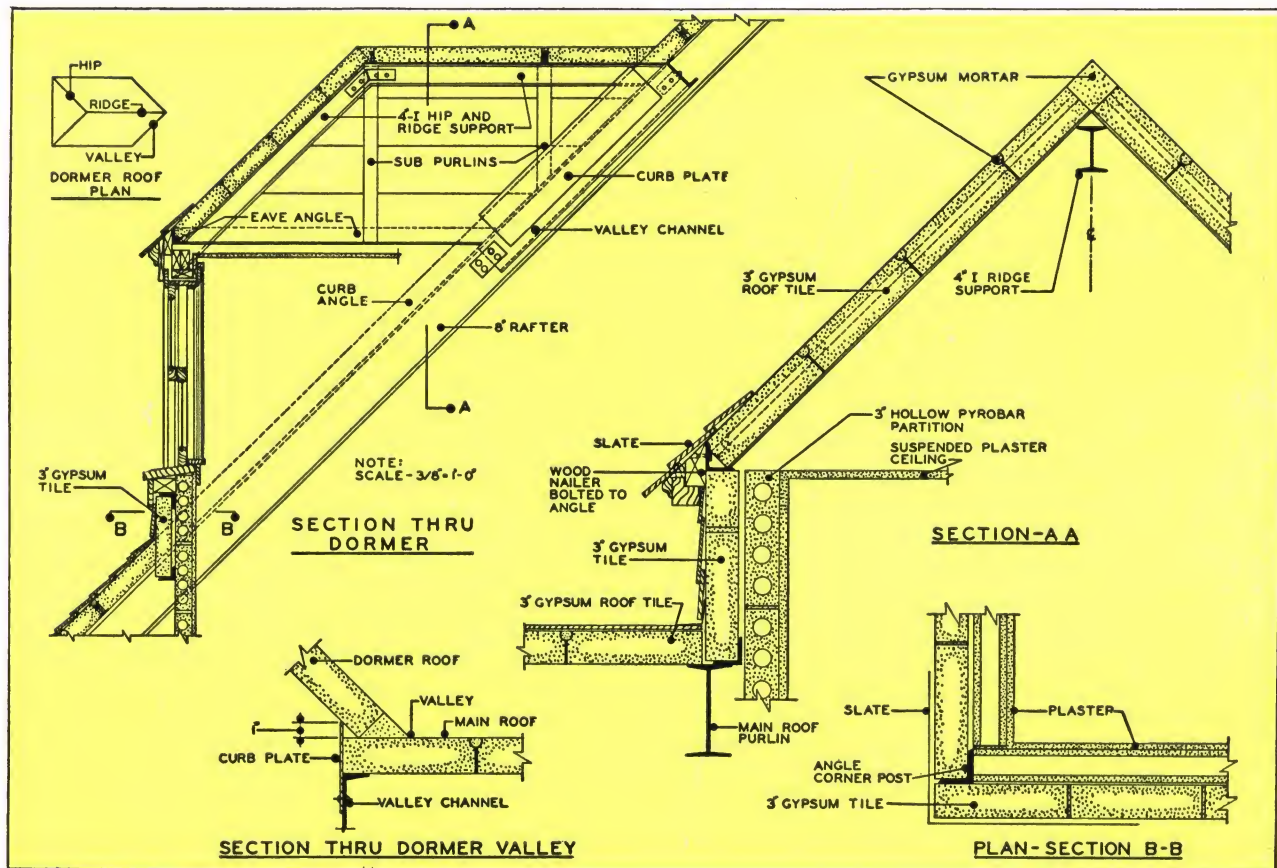


## CURBS:

SCALE: 3/4" = 1'-0"



# 3" SHORT SPAN (NAILING TYPE) GYPSUM ROOF TILE



## SPECIFICATIONS

### SCOPE

Unless otherwise shown or specified, all roof areas are to receive 3" solid short span precast reinforced gypsum roof tile complete with steel sub-purlins and gypsum grouting mortar. All curbs, cants and saddles are to be included as shown or required.

### MATERIALS

**Sub-Purlins**—Steel sub-purlins to be bulb tees or standard structural tee sections of required section modulus. (See table page 2.) All sub-purlins to have one shop coat of paint. Sub-purlins to be cut to length so that ends occur over supports.

**Roof Tile**. Shall be 3" Short Span (Nailing Type) Gypsum Roof Tile, manufactured by United States Gypsum Company.

**Grouting Mortar**. To be United States Gypsum Company's Grouting Cement, sanded at the job site in the proportion of one part cement to two parts of clean, sharp sand, by volume.

**Curbs**. Shall be 3" solid precast Gypsum Tile, manufactured by United States Gypsum Company.

**Cants and Saddles**. To be PYROFILL\* or PYROCELL\* gypsum fiber concrete, manufactured by United States Gypsum Company.

### ERECTION

**Sub-Purlins**. Place steel sub-purlins across main roof purlins at 30 $\frac{3}{4}$ " o.c. Weld each sub-purlin to main purlins with one weld at each intersection, using a  $\frac{3}{4}$ " long fillet weld on alternate sides of sub-purlins where accessible. All ends of sub-purlins shall bear on roof supports.

**Roof Tile**. Place roof tile dry between sub-purlins with sides butted tightly together and with ends bearing equally on flanges. Cut tile to fit at all walls, curbs, ridges, hips, valleys and openings as required. Grout all joints from the top with gypsum grouting mortar. Fill flush to the top surface of the tile and cut off excess mortar. All roof areas to be clean and free of debris, ready to receive the weatherproofing specified elsewhere.

**Curbs**. Install curbs as shown on drawings. Tile to be laid in gypsum cement mortar and anchored to steel framing as required.

**Cants**. Shall be accurately formed to a line.

**Saddles, or drainage fills**. Shall be placed as shown and left smooth to receive roof covering.

### OPTIONAL INCLUSIONS

**1. For eaves, rakes, etc.** At all overhanging portions of roofs, such as eaves, etc., provide a 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " eave angle, welded to sub-purlins or out-lookers to provide a solid stop for roof tile. Provide wood nailers, bolted to eave angles, where shown or required.

**2. Where pitch of roof exceeds 45°**, 3" Short Span Gypsum Roof Tile shall be secured to sub-purlins with special wire ties nailed into sides of adjacent tile and extending below and around the sub-purlin; or if bulb tee sub-purlins are used, steel wedges may be used in end joints between tile and web of sub-purlins. When pitch of roof exceeds 45°, consult nearest United States Gypsum sales office for recommendation on the application of slate, architectural tile, etc.

\*Trademark Reg. U. S. Pat. Off.

**TECHNICAL INFORMATION**

# USG<sup>®</sup> METAL EDGE GYPSUM PLANK

## **ROOF DECK**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG\* METAL EDGE GYPSUM PLANK

## DESCRIPTION

Metal Edge Gypsum Plank is a precast structural roof deck unit reinforced on all 4 edges with 21 gauge galvanized sheet steel, formed into tongues and grooves. In addition, it is integrally reinforced with 16 gauge galvanized, electrically welded steel mat.

Size—2" x 15" x 10'0". Covers 12.5 sq. ft.

Weight—13 lbs. per sq. ft.

Maximum span—7'0".

Maximum Safe Load—75 lbs. per sq. ft.

Maximum Cantilever—3'2" with 45 psf total load.



## FUNCTION AND UTILITY

### TONGUE AND GROOVE INTERLOCKING EDGES.

The accurately formed tongues and grooves on all sides and ends interlock with adjacent plank, thus distributing the load. Tongue and groove edges permit ends of plank to occur off supports. Solid bearing is provided over every support regardless of inaccurate spacing or warpage of purlins or joists.

### LIGHT WEIGHT

Only 13 pounds per square foot. Saving in dead load, saves structural steel.

### FIREPROOF

Will not support combustion. The gypsum will resist high temperatures until fully calcined, a very slow process.

### STRONG

Used for roof deck the maximum recommended span is 7'0" which permits a safe super imposed load of 75 lbs. per sq. ft., uniformly distributed.

### UPLIFT RESISTANCE

The No. 91 Clip used to attach the deck to purlins will resist uplift forces up to 474 lbs. per clip and horizontal forces up to 2100 lbs. per clip.

### ADAPTABLE

Applicable principally to flat or pitched roofs with true planes up to 30°. Can also be applied to curved or warped areas where the radius of the curve is more than 150 feet.

### EASE OF ERECTION

Large units with accurately formed metal tongues and grooves mesh and interlock readily, for fast and easy erection.

### NAILABLE

The dense hard gypsum provides good nail holding power (for light weight shingles, etc.) See Technical Data tables below.

### WINTER CONSTRUCTION

Since the units are precast and laid without grout, many winter delays are avoided.

### LOW IN COST

Both material and labor costs are low.

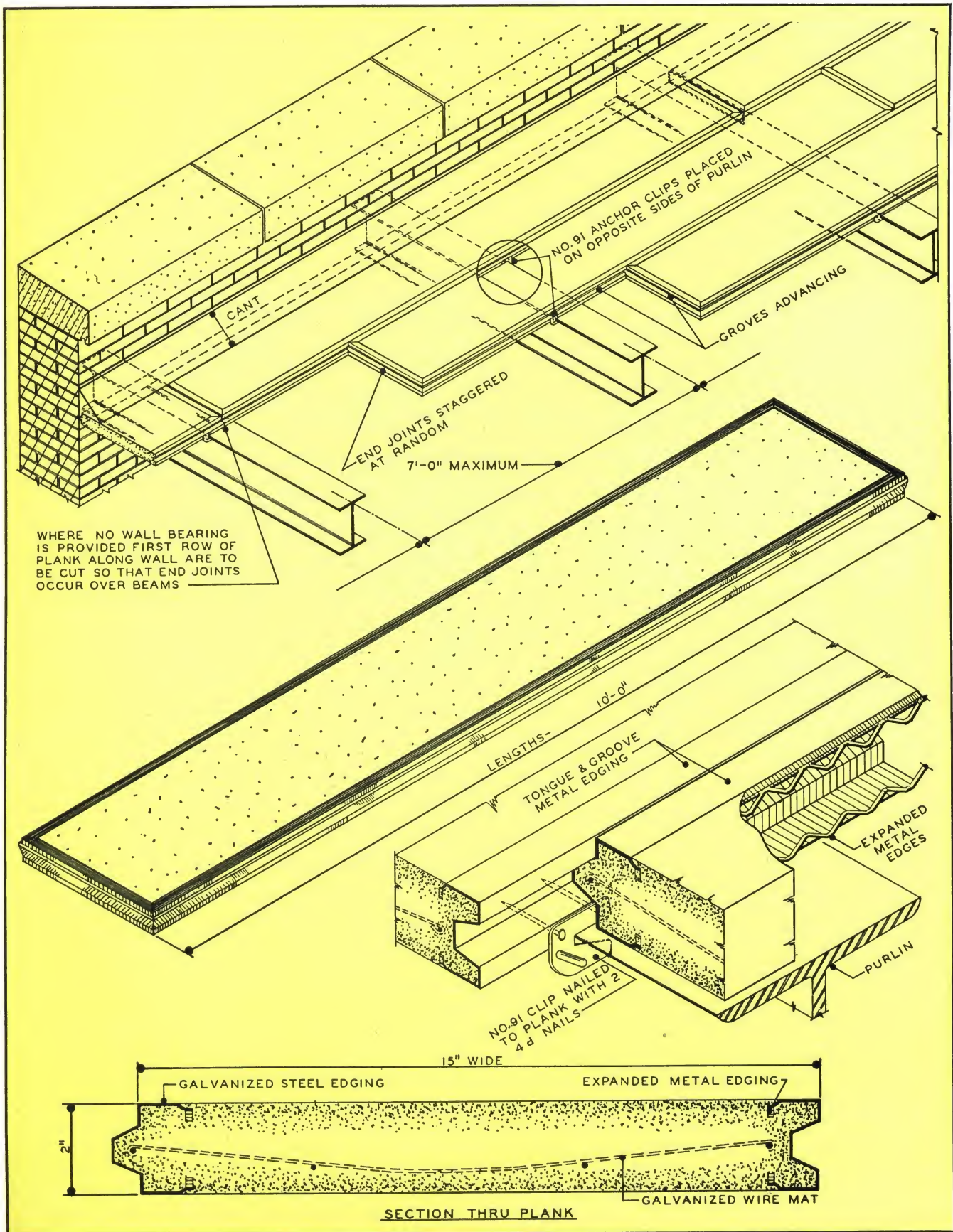
Nail Holding Power of Gypsum	
Description of Nail	Holding Power of dry slab. 1½" Penetration. lbs. per Nail.
1¾" LaBelle Square Cut	150 lbs.
1½" Galvanized Roofing Nail	71 lbs.

Thermal Insulation Values
"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)
Plank without added insulation—0.53 Btu Plank with ½" added insulation—0.29 Btu Plank with 1" added insulation—0.20 Btu
Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .32 to .33.

"USG", "PYROFILL" is a registered trademark owned by United States Gypsum, used by it to distinguish its product.  
"PYROFILL" identifies the particular gypsum fiber concrete manufactured only by United States Gypsum.

\*Trademark Reg. U. S. Pat. Off.

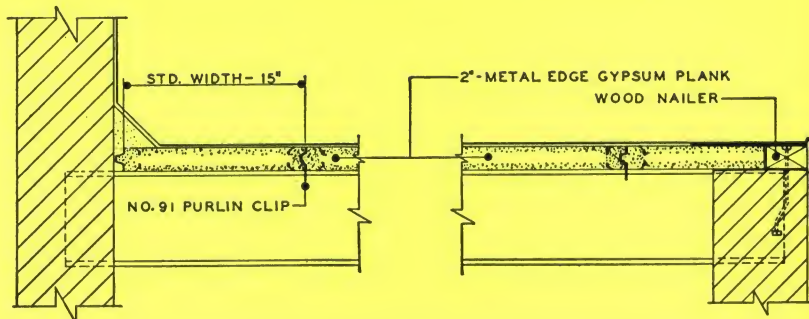
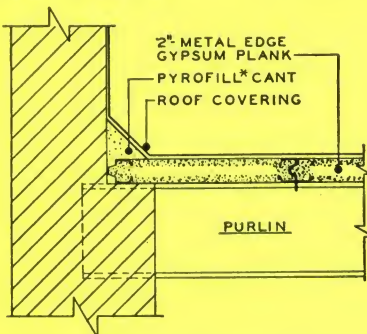
# USG METAL EDGE GYPSUM PLANK



# USG METAL EDGE GYPSUM PLANK

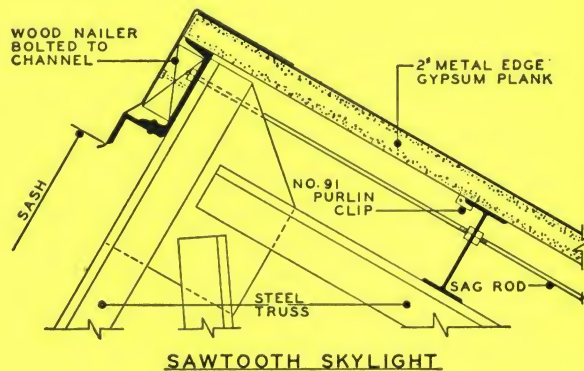
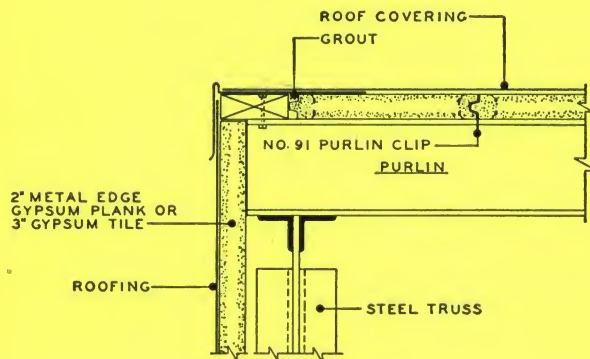
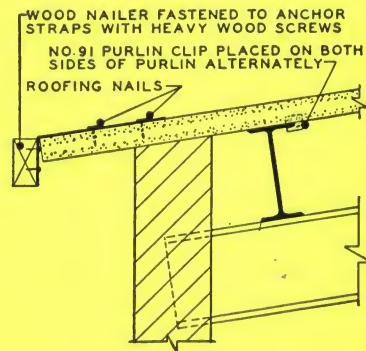
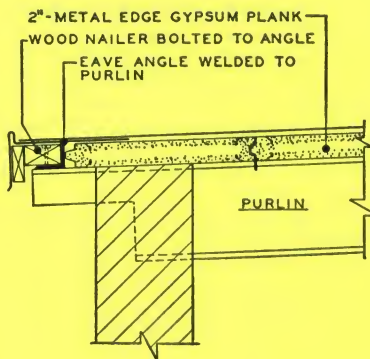
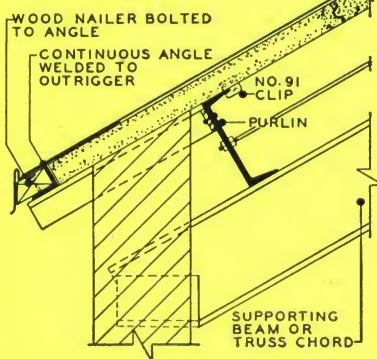
## PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"



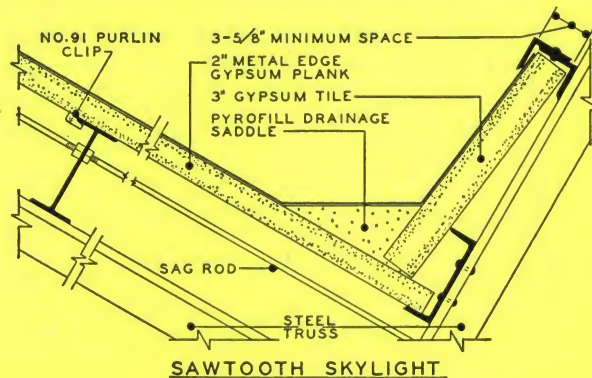
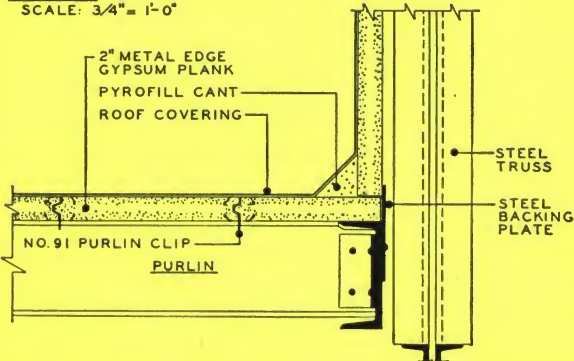
## EAVES

SCALE: 3/4" = 1'-0"



## CURBS

SCALE: 3/4" = 1'-0"



U.S. PAT. REG. U.S. PAT. OFF.

# USG METAL EDGE GYPSUM PLANK

## DIRECTIONS FOR HANDLING AND ERECTING

### SHIPPING

Plank will be loaded in the car or truck on edge and stacked with spacers between tiers or rows, straw or other protecting fillers will be used at sides and ends of cars and the materials braced or tied to prevent shifting.

### UNLOADING AND HANDLING

Plank shall be unloaded and handled on edge. Handling on edge prevents cracking and insures a sound plank at the point of installation on the roof deck.

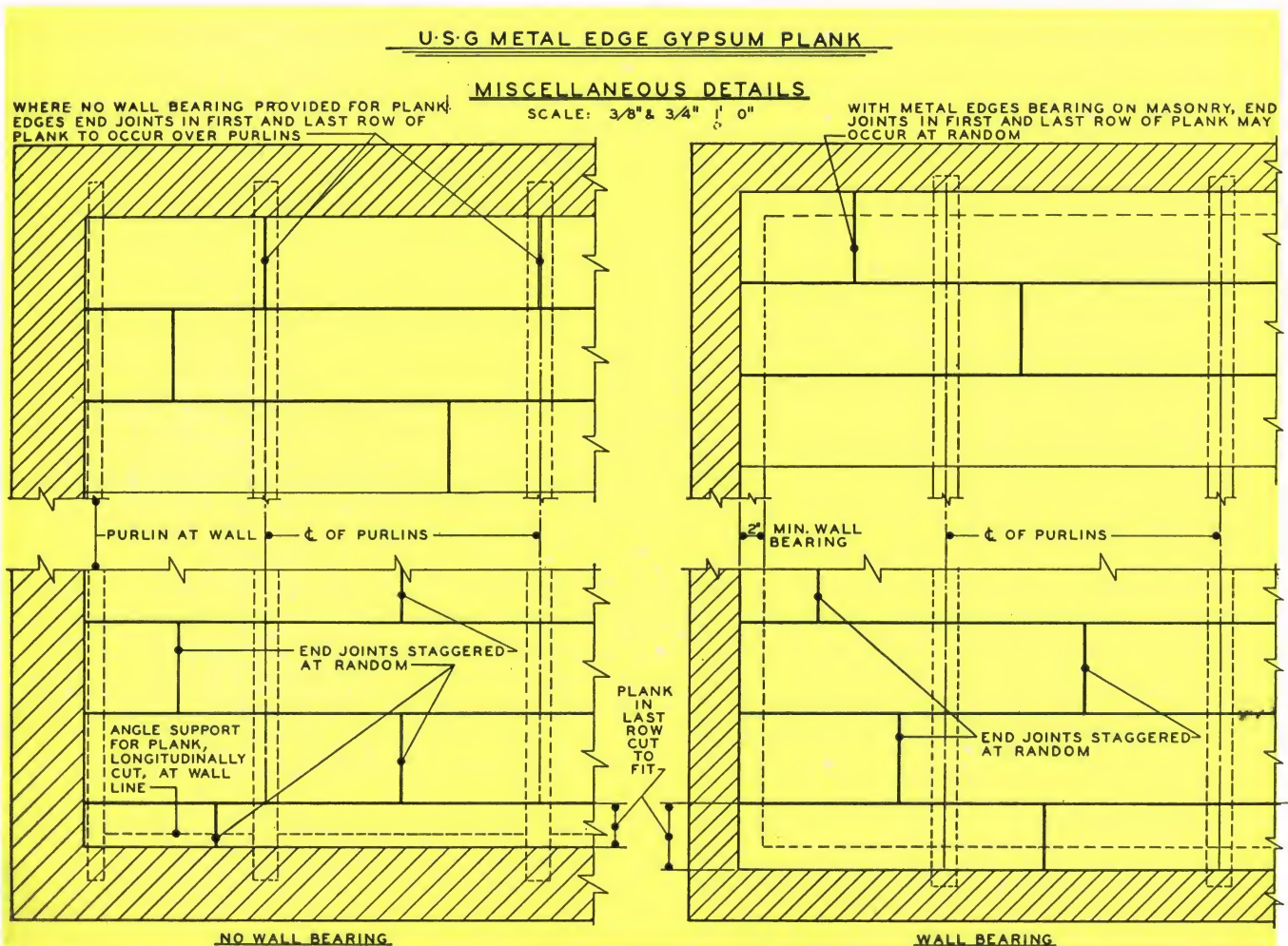
### STORAGE

When Plank are not taken direct from the car to the roof deck for installation, job storage is necessary and the following is recommended for best results:

- Select reasonably level ground with adequate drainage. Place two 4" x 4" wood runners on the ground spaced approximately 5'0" apart. Provide braced posts or other adequate support at each end of pile, to keep tile in vertical position.

- Pile tile on edge and keep as perpendicular as possible at all times. As tile are being piled they should be spaced apart at about every 8 or 10 tile with  $\frac{1}{2}$ " gypsum board dunnage or wood spacers to provide some ventilation through the pile.
- When the first tier (row) is completed place two 2" x 4's flat to correspond with the 4" x 4" at the bottom and build the second tier in like manner.
- On top of the second tier, lay another set of 2" x 4" strips laid flat to complete a pile of not more than three tiers high.
- Cover the storage pile with a tarpaulin, waterproof paper or other rain shed supported above and clear of top sides and ends so that ventilation around and through the tile is possible at all times.

(See following page)



# USG METAL EDGE GYPSUM PLANK

## DIRECTIONS FOR HANDLING AND ERECTING (con't)

### ERECTING

#### Hoisting

Plank shall be hoisted to the roof level on edges in strap slings or on lifts and kept on edge as much as possible.

#### Starting Point

It is customary to start at one corner, usually the lowest corner, of each independent roof area to be covered.

#### First Plank

The first plank must be laid so that the side marked "This side up" is up. This plank must also be laid so that the groove is advancing.

Fit the first plank as close as possible to the wall or eave yet keep in a true line with the row that is to be laid, so that all succeeding plank and/or rows may be tightly interlocked with closed joints.

#### Supports

The outside edge of all starting or final rows of roof tile must be supported or special precautions taken.

- a. When *no wall or purlin support* is provided along the longitudinal edge of the plank, the plank shall be cut so that *end joints will occur over purlins*. We suggest cutting the tongue end of one plank and the groove end of another, to provide right and left cut ends for both starting and completing subsequent rows. *For the final row, if the plank must be cut longitudinally to fit the closing space, we recommend using a suitable steel angle support under the cut edge.*
- b. When there is a *wall or purlin support* along the longitudinal edge of the starting or final row, of the plank, they are laid continuously.

#### First Row

After the first plank is in place as described above, complete laying plank in the first row by matching or abutting ends and cutting last plank to fit as required.

#### Anchorage

As each plank is laid, it shall be anchored to the roof purlins at each intersection in one of the following ways.

- a. Plank laid over *Steel I beams or Bar Joists* having flat flanged top members shall be anchored with a 16 gauge galvanized metal clip (No. 91 Purlin Clip) furnished by the United States Gypsum Co. Two 4 penny galv. slater nails, or 1" smooth shank No. 11 galv. roofing nails, 4 penny cement coated nails, or similar are required with each clip. Nails are not furnished with the clips by the United States Gypsum Co. For good lateral stiffening of the roof deck it is recommended that the clips be alternately attached on the right and left sides of successive purlins.
- b. *Steel Purlins*—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- c. *Other Type Purlins*—When clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.

- d. *Concrete Joists*—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- e. *Wood Joists*—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- f. *Slopes over 30° on steel framing*—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

#### Cutting

Plank are cut on the job to fit as required. Plank may be cut by hand or with a power saw, as follows:

- a. When cutting by hand, first cut through the metal edging with a 12" 18 gauge 14 tooth power hacksaw blade fixed in a Millers Falls type hacksaw frame No. 14½ and then cut the gypsum with an ordinary (carpenters) saw.
- b. Metal Edge Plank can be readily and economically cut with power driven saws. Use metal or masonry cutting blades as recommended by saw manufacturers. ¼" steel cored carborundum blades, 12" in diameter or carbide tipped blades are often used.

#### Second Row

The second row and subsequent rows are to be installed by starting with a full or fractional length tile that will permit end joints to be staggered at least 30" with relation to the end joints of the adjacent row. Continue the row using full length planks with ends tightly matched and finish the row with a full or fractional length plank as required.

#### Ridges and Hips

Fill joints at ridges and hips with mortar consisting of gypsum grouting cement and sand mixed in proportion of 1 part cement to two parts clean sharp sand by volume.

#### Curved Roofs

While gypsum plank do not readily lend themselves to application over curved roofs, they can be installed on curves when the radius of the curve is 150 feet or greater.

#### Repairing

If necessary to repair broken or damaged tile after installation, knock out all broken gypsum (leaving reinforcing mesh in place) and support a form below. Then pour the void full using moulding plaster, mixed with water only. Screed smooth.

#### Cants and Drainage Fills

Cant strips and drainage fills can be formed in place, using a gypsum fiber concrete mixed on the job adding water only. Use only gypsum fiber concrete over U S G gypsum plank.

# USG METAL EDGE GYPSUM PLANK

## RECOMMENDATIONS & LIMITATIONS OF USE

### JOB PROTECTION

During job storage, gypsum plank should be protected from exposure to rain and snow. Roof covering should be applied as soon as possible after installation of the plank. Handle and store on edge.

### ROOF COVERING

Apply built up roofing in accordance with the roofing manufacturer's specifications. We recommend application of roofing to Metal Edge Gypsum Plank by nailing the first sheet dry using nails providing a minimum penetration of  $1\frac{1}{2}$ " into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank.

### EXCESSIVE MOISTURE

Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

### HIGH TEMPERATURE

Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

### STEEP ROOFS

We recommend using USG 3" Short Span (nailing type) gypsum roof tile on roof pitches over  $30^\circ$ .

### VENTING OF ENCLOSED SPACES

All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Ventilating Engineers for complete information on venting of attic spaces (Chapters 10 & 12).



Handling



Cutting



Placing



Anchoring

# USG METAL EDGE GYPSUM PLANK

## SPECIFICATIONS

### SCOPE OF WORK

The contractor shall furnish all material, labor and equipment and install complete USG Metal Edge Gypsum Plank as shown and specified for Roof Deck.

All curbs, cants, saddles, etc., shall be installed as shown or specified herein.

### MATERIALS

#### METAL EDGE GYPSUM PLANK

Material shall be 2" x 15" x 10'-0" as manufactured by United States Gypsum Company.

#### CLIPS AND NAILS

The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1" smooth shank No. 11 ga. galvanized roofing nails.

#### CANTS AND SADDLES

Form from PYROFILL Gypsum Fiber Concrete manufactured by United States Gypsum Company.

#### CURB TILE

Use 3" solid precast Gypsum Roof Tile manufactured by United States Gypsum Company.

### ERECTION

#### PLACING OF PLANK

Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one

support.

Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

#### ANCHORAGE OF PLANK TO SUPPORTS

Each plank shall be anchored to supporting members by the following method:

- a. Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.
- b. Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- c. Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.
- d. Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- e. Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- f. Slopes over 30° on steel framing—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

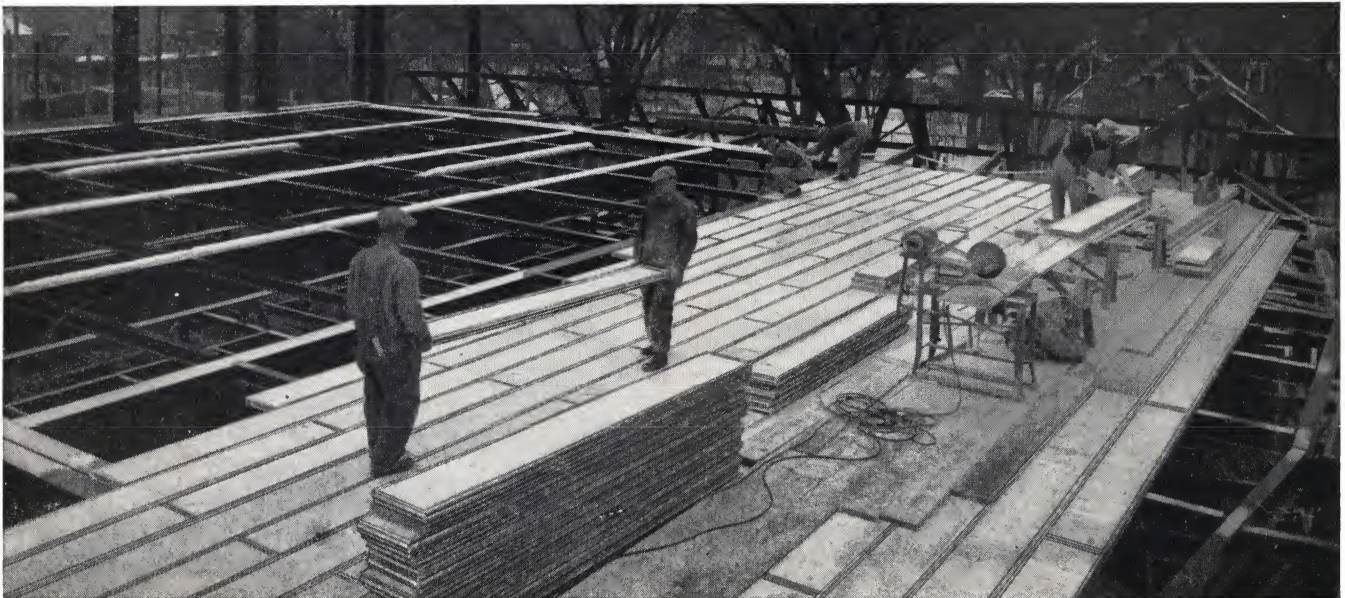
#### SPECIAL FORMING

##### RIDGES AND HIPS

Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

##### CANTS AND DRAINAGE FILLS

All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed as with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.



**TECHNICAL INFORMATION**

PYROFILL\*

**GYPSUM ROOF DECKS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# PYROFILL\* ROOF DECKS

## DESCRIPTION

**PYROFILL Roof Decks** are reinforced gypsum concrete (PYROFILL) slabs poured in place over permanent formboards creating the following different constructions:

SHEETROCK\* PYROFILL Roof Deck  
PYROFORM PYROFILL Roof Deck  
USG Insulation PYROFILL Roof Deck  
USG Acoustical PYROFILL Roof Deck  
Asbestos Board PYROFILL Roof Deck

**STEEL SUB-PURLINS** are light carbon steel sections designed for use with PYROFILL Roof Decks. Bulb Tee and A.S.C.E. rails provide:

1. Support of the deck for long span.
2. Anchorage of the deck against uplift.
3. Restraint to reduce effects of expansion of the deck due to temperature changes.

They are available in various sizes and shapes, and they are selected according to their utility and economy.

NOTE: Steel sub-purlins are not manufactured or sold by U.S.G.

**SHEETROCK Formboard** is a rigid type gypsum board,  $\frac{1}{2}$ " thick by 32" wide (or 48" wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided.

REFERENCE: Federal Specification SS-W-51a. Type A and ASTM C36-50.

**PYROFORM Mineral Fiber Formboard** is a rigid, incombustible, insulative, acoustical formboard. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. See page 4 for complete information.

**USG Insulation Formboard** is a rigid type wood fiber insulation board 1" thick, 32" wide, (or 48" wide), and cut to specified lengths to fit

purling spacings. Treated to resist mildew effectively where adequate ventilation is provided.

REFERENCE: Federal Specification LLL-F-321b.

**USG Acoustical Formboard** is a rigid type wood fiber insulation board having a slotted acoustical surface shop painted white. It is 1" x 12" x 24" in size and is treated to resist mildew effectively. See page 5 for complete information.

**ASBESTOS-CEMENT Formboard** is a rigid industrial type asbestos cement board,  $\frac{1}{4}$ " thick, cut to 32" wide by 48" long. Supplemental tees are required in cross joints. REFERENCE: Federal Specification SS-S-283 Type I or II.

NOTE: Asbestos-cement formboard is not manufactured or sold by U.S.G.

**STEEL REINFORCING for PYROFILL** slabs is a welded type galvanized wire mat consisting of No. 12 gauge longitudinal wires spaced 4" on centers and No. 14 gauge transverse wires spaced 8" on centers—usually referred to as BD 1214 mat. The effective cross sectional area per foot width of slab (No. 12 gauge wires) is 0.026 sq. in. Other comparable types of galvanized mat may be used if their effective cross sectional area is equal to or greater than BD 1214 mat, and if they will give adequate bond.

NOTE: Galvanized reinforcing mats are not manufactured or sold by U.S.G.

**PYROFILL** is a mill mixed gypsum concrete consisting of calcined gypsum and not more than 12½% by weight of wood chips, shavings or fibers. It requires the addition of water only on the job.

REFERENCE: Complies with ASA—A59.1—1954.

## DESIGN

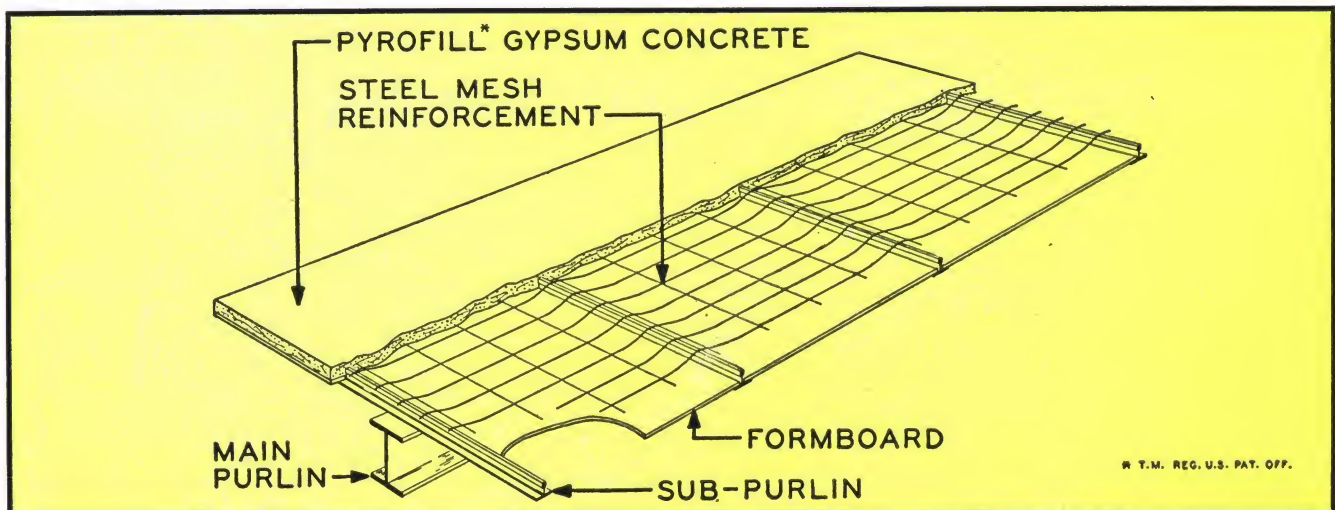
**REINFORCED PYROFILL** slabs (2" of reinforced PYROFILL poured over permanent formboards) are designed to span continuously over sub-purlins.

**STEEL SUB-PURLINS** vary in size, weight and shape, and are selected according to required span and loading. The standard spacing is 32⅝" on centers to accommodate 32" wide formboards, 24⅝" on centers for 24" wide formboards. Light bulb tees should be used spaced 48⅝" on center where 48" wide formboard is used, but the spacing of supporting steel should not exceed 36" on center.

**STEEL REINFORCEMENT** for poured-in-place PYROFILL Roof Deck is installed with Number 12 gauge wires placed continuous and perpendicular to sub purlins. When bulb tees are used 48⅝" on center over bar joists 36" or less on center the 12 ga. wires should be perpendicular to the bar joists.

**PYROFILL** (gypsum concrete) is mixed at the job site with clean water only, then poured in place, over the formboards, to an average thickness of not less than 2".

"USG", "PYROFILL" and "SHEETROCK" are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "PYROFILL" identifies the particular gypsum fiber concrete; "SHEETROCK" identifies the particular gypsum formboard, all manufactured by United States Gypsum.



# PYROFILL ROOF DECKS

## FUNCTION AND UTILITY

Economical and safe roof decks are built with USG poured in place reinforced PYROFILL construction. Some of the outstanding features are:

### Lightweight

The weights of PYROFILL deck constructions including sub-purlins are approximately as follows:

SHEETROCK PYROFILL.....	11.5 lbs./sq. ft.
PYROFORM PYROFILL.....	10.9 lbs./sq. ft.
USG Insulation PYROFILL.....	11.0 lbs./sq. ft.
USG Acoustical PYROFILL.....	10.8 lbs./sq. ft.
Asbestos Board PYROFILL.....	13.1 lbs./sq. ft.

### Strong

In tests by nationally recognized laboratories, a continuous 2" Reinforced PYROFILL slab and permanent formboards over supports spaced 32 $\frac{3}{8}$ " on centers carried a total load equivalent to more than 450 lbs. per sq. ft. when thoroughly wet, and over 700 lbs. per sq. ft. when dry.

### Incombustible

SHEETROCK PYROFILL, PYROFORM PYROFILL and Asbestos Board PYROFILL Decks will not burn. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.

### Durable

Gypsum is chemically inert and will not rot, burn or decay. Reinforced PYROFILL slabs have been in use for half a century and are still in excellent condition. Reinforced PYROFILL roof deck constructions are thoroughly proven by the test of time. Alterations can be made freely, as the slab can be cut and patched easily and quickly, with a minimum of expense.

### Appearance

The permanent formboards provide a smooth, light-colored ceiling of good-looking panelled surfaces, which should not require further decorating. See "Painting", page 6.

### Speed of Erection

No other monolithic type of poured concrete roof deck can be installed faster. PYROFILL sets quickly (within 30 minutes), permitting workmen to work on previously poured sections in pouring new sections. Up to 30,000 sq. ft. of roof area have been poured in one day.

### All Weather Construction

These roof decks can be installed during the coldest weather in which men normally work. Sufficient heat within the gypsum is generated to prevent freezing during the set. See "Exposure," "Drying" and "Venting of Enclosed Spaces," Page 6.

### Adaptability

Reinforced PYROFILL slabs may be installed on flat, warped, saw tooth, curved or pitched roof framing.

### Seismic Loads

PYROFILL roof decks meet requirements for resistance to seismic forces as established by the Uniform Building Code (Pacific Coast Building Officials Conference), California State Division of Architecture, and the building codes of the City of Los Angeles and the County of Los Angeles. Detailed information is available on request.

### Low Cost

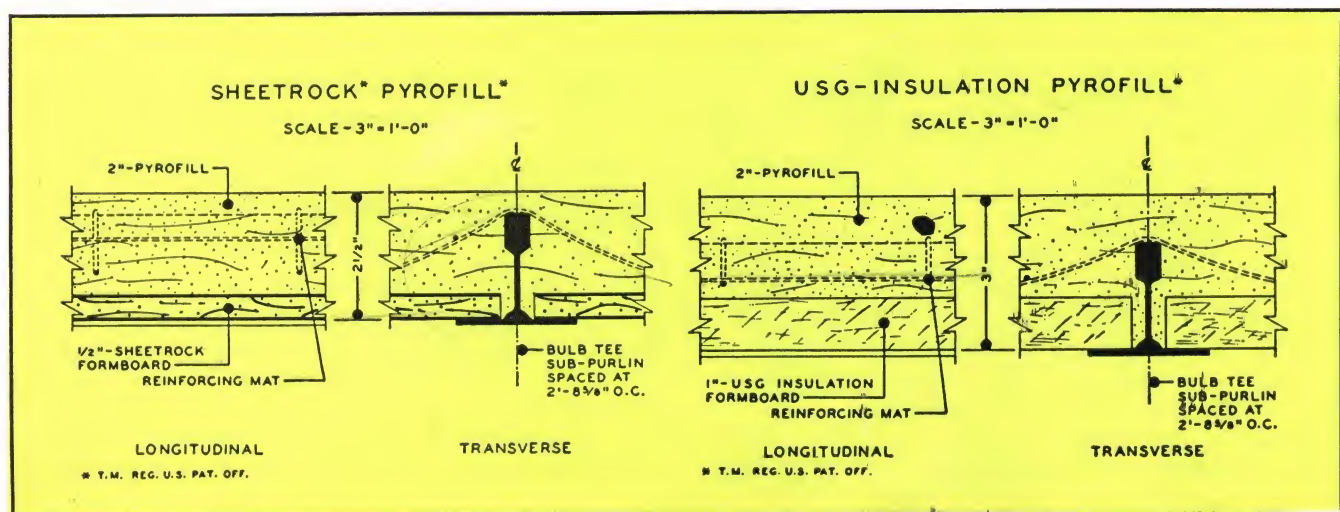
The simplicity of design, light weight, and speed of erection combined with its other outstanding qualities of rigidity, incombustibility, and finished undersurface make the overall cost of this construction very economical.

## INSTALLATION SERVICE

Reinforced PYROFILL roof decks are installed by experienced U.S.G. Gypsum Roof Deck Contractors who are located conveniently in all part of the U. S. A. This service insures the best in workmanship, quality and safety. Consult your USG representative for contractors serving your area.

## SALES REPRESENTATIVES

United States Gypsum maintains a staff of competent sales engineers and architect service representatives, strategically located for prompt service. They are available to assist with any problems or questions concerning the design or function of these constructions.



# PYROFORM PYROFILL ROOF DECKS



## FUNCTION AND UTILITY

PYROFORM Mineral Fiber Formboard, together with PYROFILL, the original gypsum concrete, provides an incombustible roof deck with high insulative and acoustical properties. PYROFORM was designed specifically as a formboard and provides superior strength and rigidity necessary for this purpose. The undersurface is finished with a mineral fiber membrane and may be left exposed as a finished acoustical ceiling. PYROFORM offers you these outstanding advantages:

**Incombustible**—PYROFORM qualifies under Class A (incombustible) of Federal Specifications SS-A-118b, Acoustical Units, Prefabricated.

**Insulative**—PYROFORM leads all formboards in thermal efficiency. Average thermal conductance ("C" value) at a nominal 1" thickness is .24 btu/sq. ft./°F. See table below for U-factor values.

**Sizes to Fit Job**—PYROFORM, 1" thick, is available in the following widths and lengths to fit job requirements:

- 32" wide, 48" long
- 32" wide, 42" through 47 $\frac{3}{4}$ " long, in  $\frac{1}{4}$ " increments
- 24" wide, 36" through 96" long, in  $\frac{1}{4}$ " increments.

**Strong and Stable**—PYROFORM Formboard placed on sub-purlins spaced 32 $\frac{3}{8}$ " on center with cross tees will support a 2" thick pour of PYROFILL slurry with a minimum of deflection. Its mineral fibers are unaffected by moisture and will not mildew.

**Finished Acoustical Ceiling**—The under surface of PYROFORM, smooth and attractive, medium tan in color, can be left exposed as a finished acoustical ceiling with high acoustical absorption. See table below.

**Paintable**—Meets requirements of Federal Specifications SS-A-118b. It may be spray painted with resin emulsion or casein paints without appreciable loss in acoustical absorption. The deck should be thoroughly dry before painting.

## LIMITATIONS OF USE

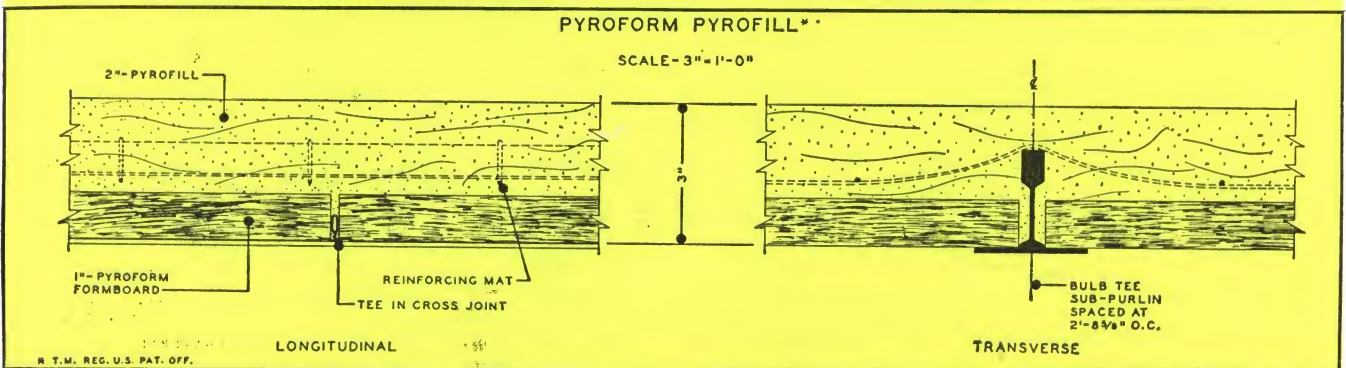
This construction is subject to the same limitations of use as other PYROFILL constructions (see page 6).

PYROFORM Mineral Fiber Formboard should always be stored in a dry place. The normal moisture from a PYROFILL slab has no

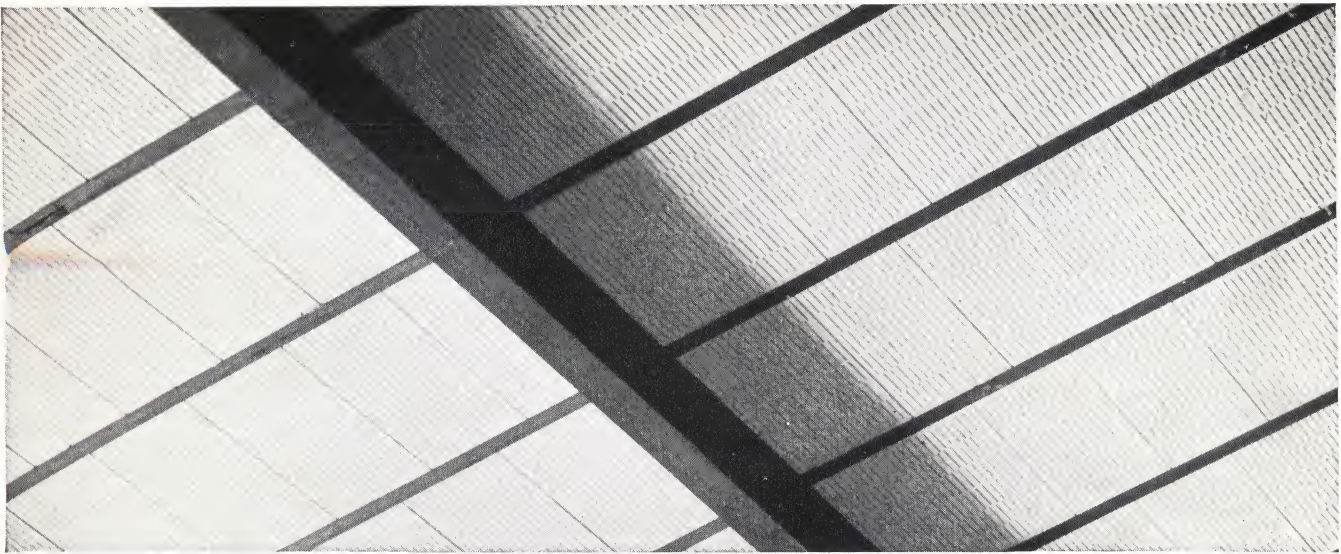
effect on the performance of PYROFORM. Soaking of the formboard prior to pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation.

## TECHNICAL DATA

PYROFORM SOUND ABSORPTION COEFFICIENTS (Riverbank Laboratories Test No. A 55-53)										THERMAL INSULATION VALUES: PYROFORM—PYROFILL ROOF DECKS		
Type	Thick- ness	Mount- ing	Coefficients						Noise Red.Coef.	Description of Construction		U Factor
			125	250	500	1000	2000	4000				
Mat- faced	1"	#4	.08	.36	.84	.90	.93	.91	.75	Exposed Underside, no added insulation		.16
										Exposed Underside, plus 1" roof insulation		.11
										Vented air space and ¾" plaster ceiling beneath, no added insulation		.13



# ACOUSTICAL PYROFILL ROOF DECKS



## FUNCTION AND UTILITY

USG Acoustical Formboard is a rigid type wood fiber insulation board having a slotted acoustical surface shop painted white. Both the board and the paint are treated to resist mildew effectively where adequate ventilation is provided. The 1" x 12" x 24" units are erected on bulb tees spaced 24 $\frac{3}{8}$ " on center. Used with a 2" reinforced PYROFILL gypsum concrete slab the construction provides a rigid, monolithic, paintable, insulation roof deck with excellent acoustical value. This construction offers the outstanding advantages of PYROFILL construction, plus:

**High Acoustical Absorption**—Noise reduction coefficient (NRC) = .65 for no. 4 mounting.

**High Light Reflectivity**—78%.

**Excellent Appearance**—Hi-Lite finish (shop painted white).

**Lightweight**—USG Acoustical Formboard weighs but 1.2 lbs. per sq. ft.

**Insulative**—"K" factor for 1" Acoustical Formboard is 0.38. See table on page 6 for comparative U factors.

**Paintable**—Brush paintable without loss of noise reduction efficiency. The deck should be thoroughly dry before painting.

**Economy**—Considerably lower in cost than regular deck constructions plus separate acoustical treatment.

## INSTALLATION

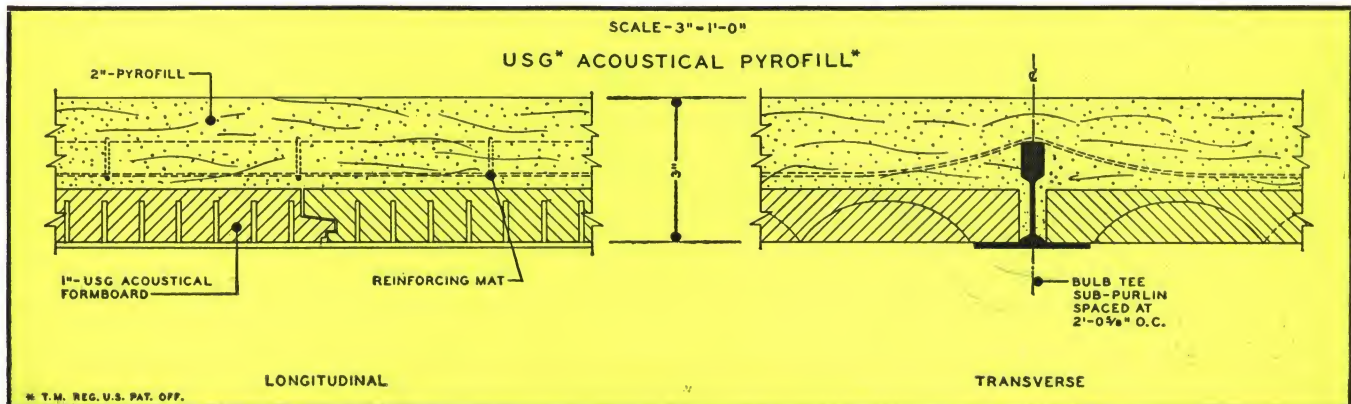
The installation method used for USG Acoustical PYROFILL Roof Deck is basically the same as for other PYROFILL constructions.

Sub-purlins are spaced 24 $\frac{3}{8}$ " on center, so this closer spacing permits greater loads than the sub-purlin load table indicates on page 7. To determine the load carrying capacity for any sub-purlin shown in this table multiply the tabulated load shown by 1.327. For example, a tabulated load of 35 psf would become 46 psf.

## LIMITATIONS OF USE

This construction is subject to the same limitations of use as other PYROFILL constructions.

USG Acoustical Formboard, shop painted white, is susceptible to water staining. United States Gypsum cannot assume responsibility for such staining. If staining occurs we suggest field painting after the slab is dry.



# PYROFILL ROOF DECKS

## RECOMMENDATIONS & LIMITATIONS OF USE

### Excessive Moisture or Temperature

PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

### Exposure

During application, PYROFILL roof decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i. e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that the first 2 plies of the felt be nailed. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values on page 11.

### Drying

PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows, adequate mechanical (forced) ventilation is required to remove all construction moisture. Consult your USG representative if unusual conditions prevail.

### Venting of Enclosed Spaces

The underside of a PYROFILL Deck should not be enclosed by a ceiling before the deck is dry. The enclosed space should always be vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Ventilating Engineers for complete information on venting of attic spaces (Chapters 10 & 12).

### Acids

Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. If acid fumes are considered a problem, consult your USG representative.

### Heavy Loads

Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

### Steep Roofs

PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG's 3" SHORT SPAN "NAILING TYPE" Gypsum Roof Tile is recommended. See page 11 for PYROFILL nail holding data.

### Expansion and Contraction

PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 100 ft. apart.
3. Separate wings of "L", "U" and "T" shaped buildings with expansion joints.
4. A wood fiber or mineral fiber filler strip should be installed between all junctures of roof slabs with parapet walls, stacks, etc. See details on pages 10 and 11.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inch per °F. See *Steel Construction*, Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

### Painting

PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a finished undersurface. When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Consult your USG representative.

### Suspended Ceilings

Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 7 for load values of various sub-purlins.

### Sheet Metal Roof Coverings

Sheet metal roof coverings such as aluminum, copper or tin can be successfully applied over PYROFILL roof decks if properly anchored to the slab. The recommended attachment is by bolting the anchoring members to the slab, using toggle bolts extending entirely through the slab.

### Uplift

During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. The usual requirement is to resist a total uplift force of 35 lbs. per sq. ft. over the main roof area, and 45 lbs. per sq. ft. over the projecting eaves, etc. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 200 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joist should have supplemental anchorage to develop the required uplift resistance.

TABLE OF SLAB WEIGHTS AND THERMAL INSULATION VALUES

	Approx. Slab Weight per Square Foot	"U" Factor for complete roof slab including Built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)		
		No Insulation	½" Insulation	1" Insulation
2½" SHEETROCK PYROFILL ROOF SLAB				
2" PYROFILL Over ½" SHEETROCK	10.7	0.38	0.24	0.18
3" PYROFORM PYROFILL ROOF SLAB				
2" PYROFILL OVER 1" PYROFORM	10.0	0.16	0.13	0.11
3" U.S.G. INSULATION PYROFILL ROOF SLAB				
2" PYROFILL Over 1" U.S.G. INSULATION FORMBOARD	10.1	0.19	0.15	0.12
3" U.S.G. ACOUSTICAL PYROFILL ROOF SLAB				
2" PYROFILL Over 1" ACOUSTICAL FORMBOARD	9.9	0.20	0.16	0.13
2½" Asbestos Board PYROFILL ROOF SLAB				
2¼" PYROFILL Over ¼" Asbestos Board	12.2	0.40	0.25	0.18

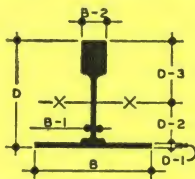
NOTES: 1. For total weight of roof deck add weight of sub-purlins to the approx. slab weights shown above.

2. The component materials weigh approximately: PYROFILL 52 lbs. cu. ft. ½" SHEETROCK 2.05 lbs. sq. ft. PYROFORM 1.3 lbs. sq. ft. 1" U. S. G. Insulation Formboard 1.45 lbs. per sq. ft. (1" U. S. G. ACOUSTICAL FORMBOARD 1.2 lbs. sq. ft.) ¼" Asbestos board 2.44 lbs. per sq. ft.

# PYROFILL ROOF DECKS

## INDIVIDUAL TABLES FOR SUB-PURLIN DETAILS

BULB TEE



TYPE	Wt. lbs.	I in 4	S in 3	B inches	B <sup>1</sup> inches	B <sup>2</sup> inches	D inches	D <sup>1</sup> in.	D <sup>2</sup> in.	D <sup>3</sup> inches
1480 Bulb. T. (B)	1.55	0.146	0.173	1.5000	0.100	0.4375	1.5000	0.100	0.558	0.842
3158-X Bulb. T. (W)	1.45	0.160	0.161	1.4375	0.109+	0.3125	1.6875	0.109	0.582	0.9965
158 Bulb. T. (I)	1.50	0.162	0.165	1.5625	0.109+	0.3750	1.6250	0.109	0.532	0.9840
1680 Bulb. T. (B)	2.00	0.251	0.261	1.6250	0.120	0.5000	1.7500	0.120	0.650	0.9800
168 Bulb. T. (I)	2.00	0.247	0.240	1.6250	0.125	0.4370	1.7500	0.132	0.590	1.0280
3168 Bulb. T. (W)	2.00	0.247	0.240	1.6250	0.125	0.4375	1.7500	0.132	0.590	1.0280
3178 Bulb. T. (W)	2.47	0.397	0.324	2.0000	0.141	0.5000	2.0000	0.141	0.635	1.2240
1780 Bulb. T. (B)	2.40	0.348	0.332	1.8750	0.125	0.5625	1.8750	0.125	0.701	1.0490
178 Bulb. T. (I)	2.50	0.364	0.340	1.9000	0.140	0.5620	1.8750	0.140	0.665	1.0700
200 Bulb. T. (I)	3.00	0.503	0.460	2.063	0.140	0.6560	2.0000	0.140	0.768	1.0920
3218 Bulb. T. (W)	3.01	0.561	0.472	2.0625	0.140	0.5940	2.1250	0.140	0.795	1.1900
2180 Bulb. T. (B)	3.05	0.621	0.520	2.2500	0.125	0.7500	2.1250	0.125	0.827	1.1730
214 Bulb. T. (B)	3.20	0.671	0.494	2.3750	0.141	0.6250	2.2500	0.109	0.783	1.3580
2140 Bulb. T. (B)	3.65	0.786	0.639	2.3750	0.141	0.7500	2.2500	0.109	0.907	1.2340
3228 Bulb. T. (W)	3.65	0.852	0.738	2.0000	0.125	0.8750	3.2125	0.125	1.032	1.1560
3258 Bulb. T. (W)	4.67	1.370	1.050	2.2500	0.141	0.9375	2.6250	0.141	1.172	1.3125

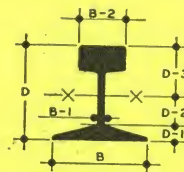
(1) Inland Steel Company—38 S. Dearborn St., Chicago 3, Ill.

(B) Buffalo Steel Corp.—Tonawanda, N. Y.

(W) West Virginia Steel & Mfg. Co., Huntington, W. Va.

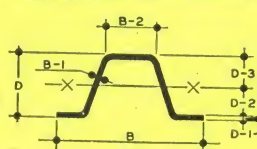
Note: All properties shown are taken from data furnished by manufacturers indicated above.

A.S.C.E..RAIL

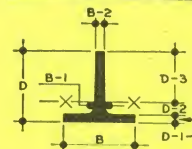


TYPE	Wt. Fr.	I In. 4	S In. 3	B Inches	B <sup>1</sup> In.	B <sup>2</sup> Inches	D Inches	D <sup>1</sup> Inches	D <sup>2</sup> Inches	D <sup>3</sup> Inches
8 lbs. Per Yd. (W)	2.67	0.27	0.31	1.5625	—	0.8125	1.5625	0.2812	0.4188	0.8625
12 lbs. Per Yd. (W)	4.00	0.66	0.63	2.0000	—	1.0000	2.0000	0.3438	0.6162	1.0400
16 lbs. Per Yd. (W)	5.33	1.24	1.01	2.3750	—	1.1718	2.3750	0.3750	0.7720	1.2280
20 lbs. Per Yd. (W)	6.67	1.94	1.43	2.6250	—	1.3437	2.6250	0.4375	0.8305	1.3570
25 lbs. Per Yd. (W)	8.33	2.50	1.77	2.7500	—	1.5000	2.7500	0.4844	0.8532	1.4124
30 lbs. Per Yd. (W)	10.00	4.06	2.53	3.1250	—	1.6875	3.1250	0.5312	0.9891	1.6047

### FLANGED CHANNEL



## STRUCTURAL TEE



TYPE	Wt. Fl.	I in. 4.	S in. 3	B Inches	B <sup>1</sup> In.	B <sup>2</sup> Inches	D Inches	D <sup>1</sup> Inches	D <sup>2</sup> Inches	D <sup>3</sup> Inches
1/4"x1/2"x1/8" T. (B)	0.81	—	—	1.2500	—	0.1250	0.500	0.1250	—	—
1/2"x1/2"x1/8" T. (B)	1.33	0.086	0.081	1.5000	—	0.1250	1.500	0.1250	0.312	1.0630
1.5 lb. Fl.-Ch. (B)	1.50	0.065	0.110	2.5625	0.123	1.0000	1.0625	0.1230	0.3440	0.596
2.0 lb. Fl.-Ch. (B)	2.00	0.166	0.218	3.1250	0.109	1.0938	1.4375	0.1250	0.5590	0.754

### SELECTION TABLE OF SUB-PURLINS FOR 2" PYROFILL SLABS OVER FORMBOARDS

VALUES SHOWN ARE BASED ON properties determined by each sub-purlin manufacturer. Purlins Spaced 2'8 3/4" On Centers, fs @ 20,000 psi, M=1/10 WL except as noted  
Exceptions to spacing and slab thickness are noted in the table.

SUB-PURLINS				SAFE TOTAL LOAD in pounds per sq. ft. uniformly distributed for spans of 3'0" to 12'0" in increments of 6 inches																			Maximum Eave Overhang (See Note 10)	
TYPE	S in <sup>3</sup>	Weight Pounds Lin. Ft.	Weight Pounds Sq. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"		
1.5 Lb. Fl. Ch. (B)	0.110	1.50	0.54	74	54	41	32	—	—	—	—	—	—	Purlin Spacing 2'9½"								1'9"		
1480 Bulb. T. (B)	0.173	1.55	0.57	117	86	66	52	42	35	—	—	—	—									2'1"		
3158-X Bulb. T. (W)	0.161	1.45	0.53	110	81	62	49	39	33	—	—	—	—									2'1"		
158 Bulb. T. (I)	0.165	1.50	0.54	112	83	63	50	40	33	—	—	—	—									2'1"		
168 Bulb. T. (I)	0.240	2.00	0.74		120	92	73	59	49	41	35	30	—									2'6"		
3168 Bulb. T. (W)	0.240	2.00	0.74		120	92	73	59	49	41	35	30	—									2'7"		
1680 Bulb. T. (B)	0.261	2.00	0.74			100	79	64	53	44	37	33	—									2'8"		
2.0 Lb. Fl. Ch. (B)	0.218	2.00	0.71			81	63	51	42	35	30	—	Purlin Spacing 2'10"								2'9"			
8 lb. Rail (W)	0.310	2.67	0.98			119	94	76	63	53	45	39	34	30	—								2'11"	
3178 Bulb. T. (W)	0.324	2.47	0.91			124	98	79	66	55	47	41	35	31	—								2'11"	
1780 Bulb. T. (B)	0.332	2.40	0.88			127	100	81	67	56	48	41	36	31	—								3'0"	
178 Bulb. T. (I)	0.340	2.50	0.92			130	103	83	69	58	49	43	37	33	—								3'0"	
200 Bulb. T. (I)	0.460	3.00	1.10				139	113	93	78	67	58	50	44	39	35	31	—					3'6"	
3218 Bulb. T. (W)	0.472	3.01	1.11					116	96	80	68	59	51	45	40	36	32	—					3'7"	
214 Bulb. T. (B)	0.494	3.20	1.18					121	100	84	71	61	53	47	42	37	33	31	—					3'9"
2180 Bulb. T. (B)	0.520	3.05	1.12					127	104	88	75	64	56	49	43	39	35	32	—					3'9"
12 Lb. Rail (W)	0.630	4.00	1.47					128	107	91	79	69	59	53	48	42	38	34	31	—	*31	—	4'2"	
2140 Bulb. T. (B)	0.639	3.65	1.33					126	107	91	78	69	60	53	47	42	38	34	31	—	—	—	4'2"	
3228 Bulb. T. (W)	0.738	3.65	1.33						124	106	91	80	70	62	55	50	45	41	37	34	31	—	4'5"	
16 Lb. Rail (W)	1.010	5.33	1.94									125	109	96	85	75	68	61	*55	*49	*45	*42	5'2"	
3258 Bulb. T. (W)	1.050	4.67	1.69									130	113	99	88	78	71	64	58	53	48	44	5'4"	
20 Lb. Rail (W)	1.430	6.67	2.42											135	120	107	96	87	79	72	*65	*58	6'2"	
25 Lb. Rail (W)	1.770	8.33	3.03													132	119	107	97	89	81	75	6'11"	
30 Lb. Rail (W)	2.530	10.00	4.00																	139	127	116	107	8'3"
				Min. Thickness = 3" total—Spacing 2'9"																				
				Min. Thickness = 3" total—Spacing 2'9"																				
				Min. Thickness = 3¼" total—Spacing 2'9"																				
				Min. Thickness = 3½" total—Spacing 2'9"																				

NOTES: 1. Loads to left of heavy line have deflections less than  $1/360$  of span—To Right over  $1/360$  but less than  $1/240$  of span.

2. Loads marked\* limited by deflection—deflection based on semi-continuous spans or  $D=3$  w/  $4/384$  EI.

3. To determine total safe load for Bending Moment of  $\frac{1}{8}$  WL use 80% of the tabulated load.

4. To determine total safe load for a maximum fiber stress of 18,000 psi use 90% of tabulated load.

5. For suspended ceilings use loads shown to the left of the heavy line; or 75% of loads shown to right of the heavy line can generally be safely used.

6. The most economical spans are from 6'0" to 8'0"—Values for other sub-purlin spacings can be determined by direct ratio.

7. (I) Inland Steel Co. (B) Buffalo Steel Corp. (W) West Virginia Steel & Mfg. Co.

8. We do not recommend using design loads less than 45 pounds per sq. ft. These are indicated by light type.

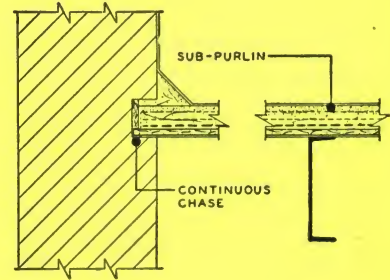
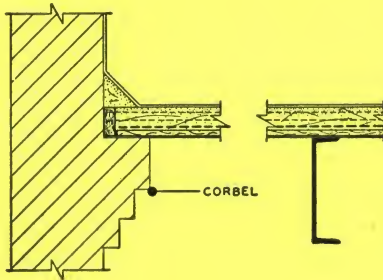
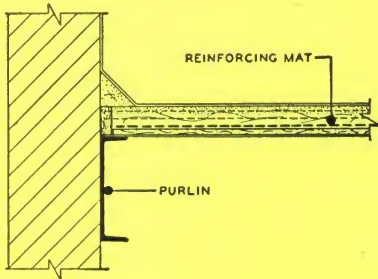
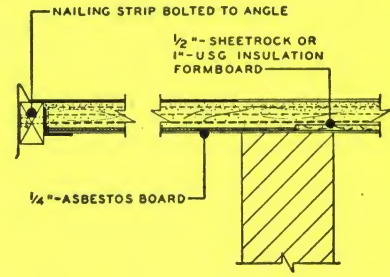
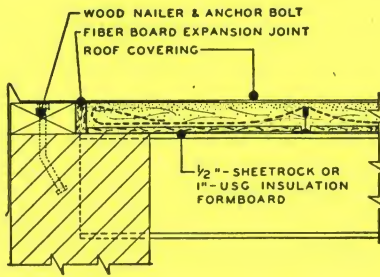
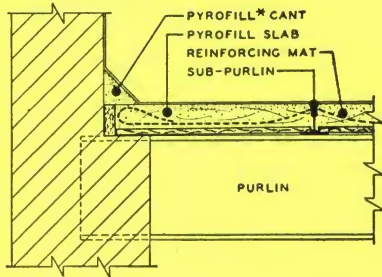
9. For values of Acoustical slabs with  $24\frac{5}{8}"$  spacing multiply values shown by 1.327.

10: Values shown are for a total load of 45 pounds per sq. ft. Bending moment "M" =  $\frac{1}{2}$  WL. Spaced as indicated.

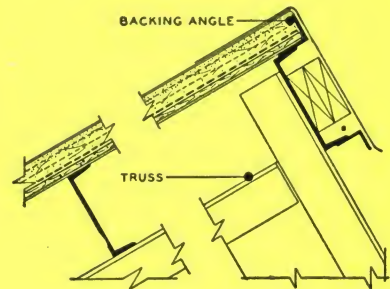
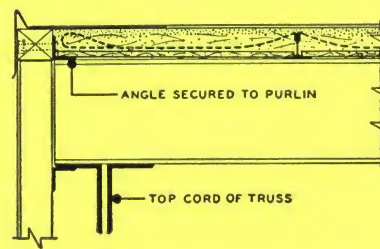
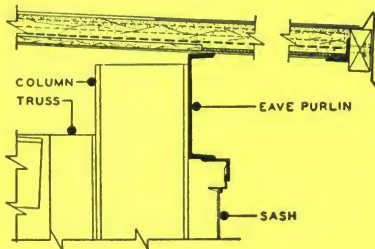
# PYROFILL ROOF DECKS

## APPLICATION OVER STEEL BEAMS SCALE— $\frac{3}{4}" = 1'0"$

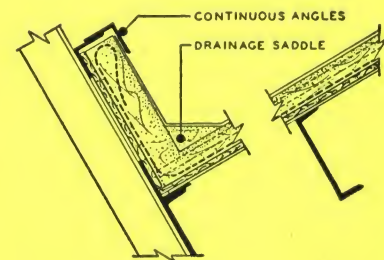
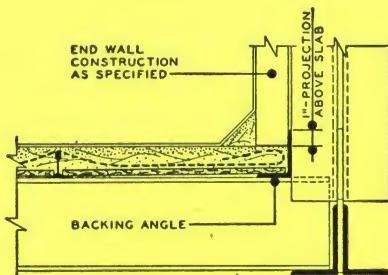
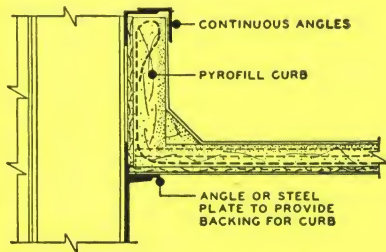
### WALL DETAILS



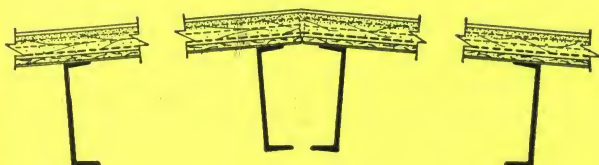
### EAVES



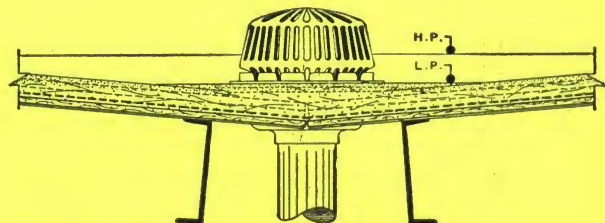
### CURBS



### RIDGE



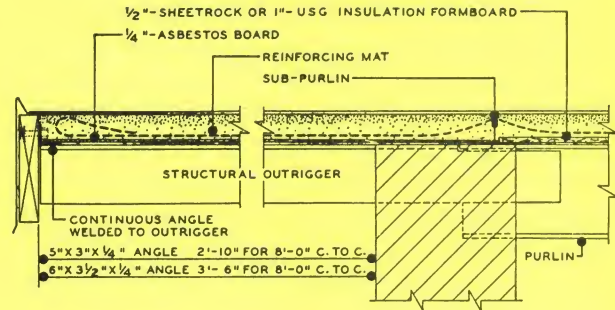
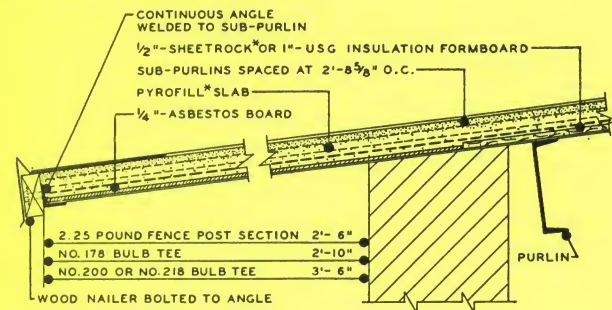
### VALLEY



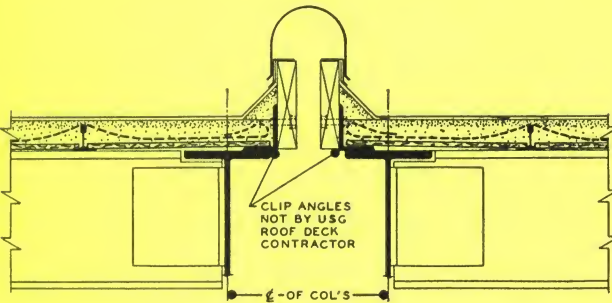
# PYROFILL ROOF DECKS

## APPLICATION OVER STEEL BEAMS SCALE— $\frac{3}{4}'' = 1'0''$

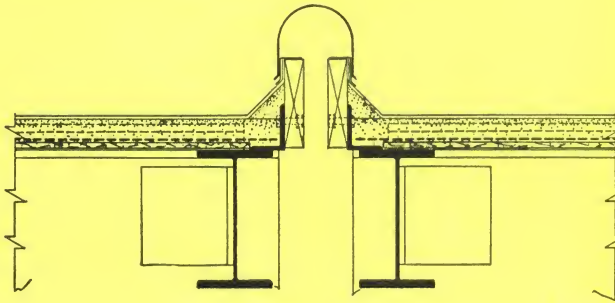
### EAVE & GABLE OVERHANG (OVERHANG BASED ON $45\frac{3}{8}''$ TOTAL LOAD)



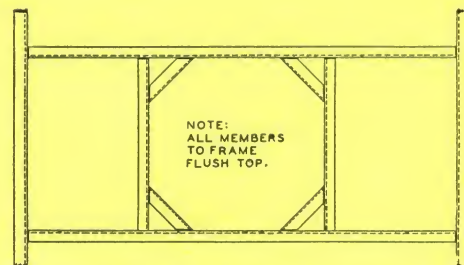
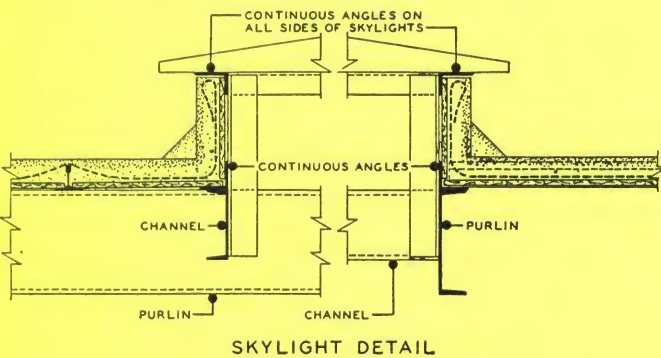
### EXPANSION JOINT PARALLEL TO GIRDER



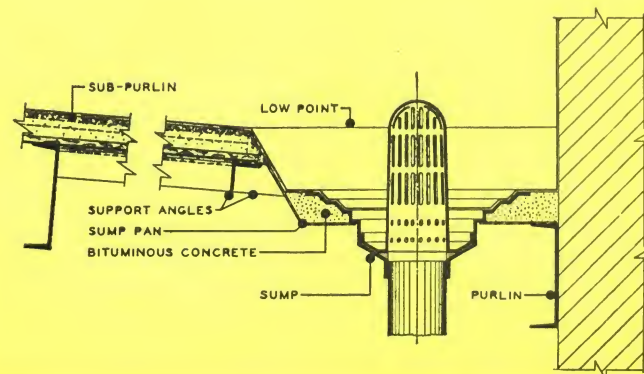
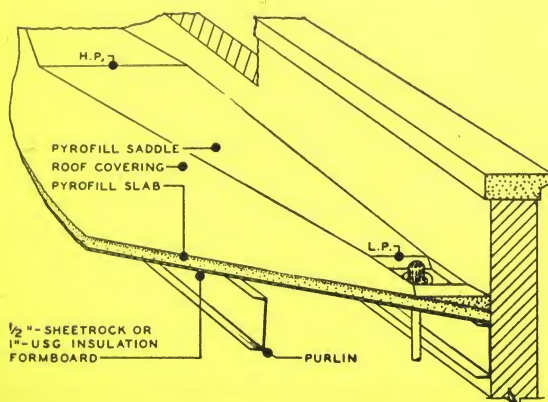
### EXPANSION JOINT PARALLEL TO PURLIN



### MISCELLANEOUS DETAILS



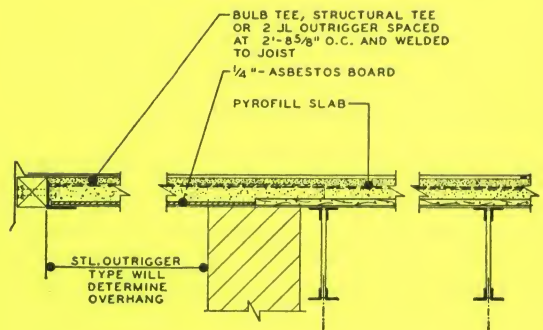
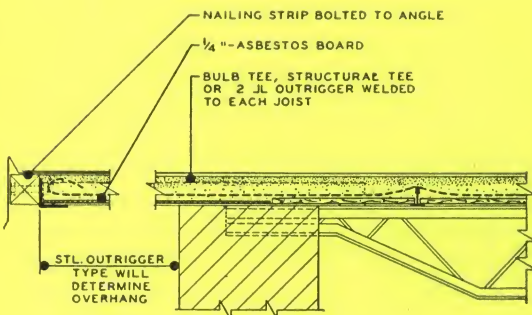
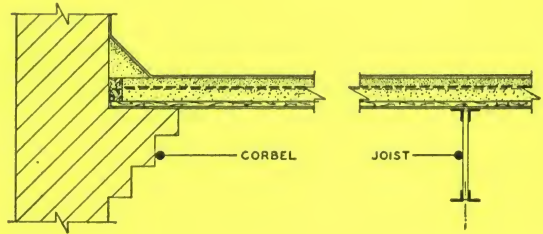
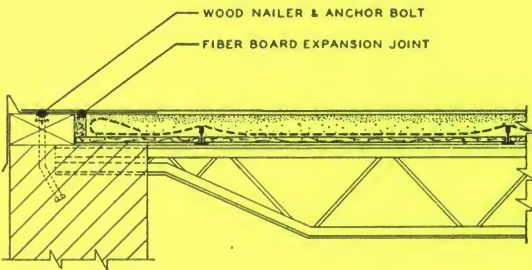
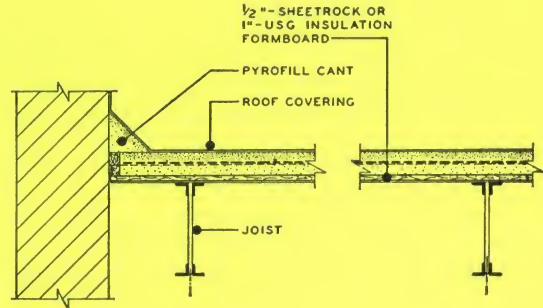
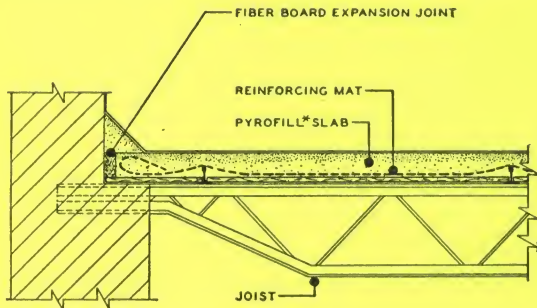
### TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30" OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS



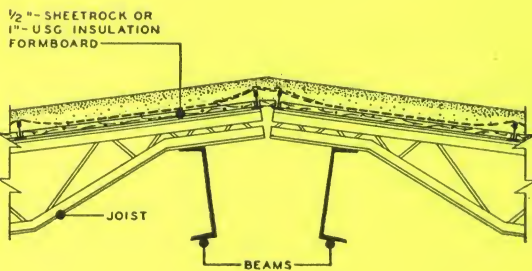
# PYROFILL ROOF DECKS

## APPLICATION ON BAR JOIST SCALE— $\frac{3}{4}" = 1'0"$

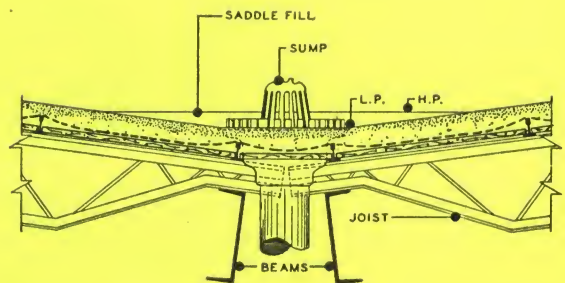
### WALL DETAILS



### RIDGE DETAIL



### VALLEY DETAIL




# PYROFILL ROOF DECKS

## MISCELLANEOUS DATA AND DETAILS

### NAIL HOLDING POWER OF PYROFILL

Resistance to direct pull in pounds per nail for penetration shown

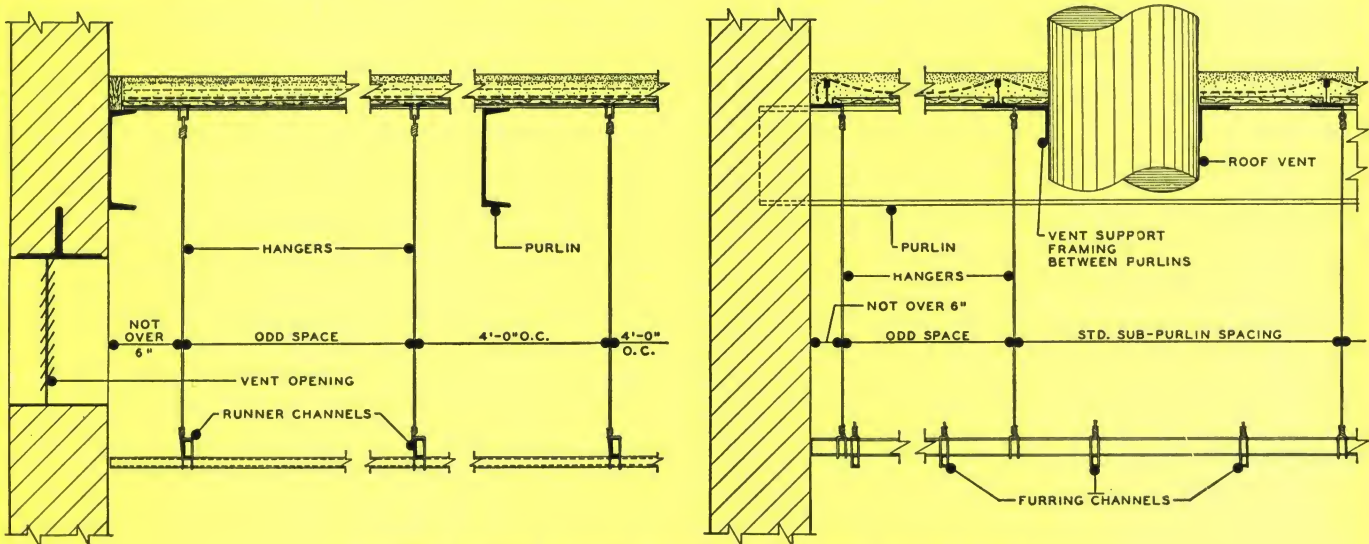
Type of Nail	La Belle Square Cut Nails (Wheeling)				Wire Nails
	5-Penny Shingle	6-Penny Common	6-Penny Cornice	7-Penny Common	7-Penny Common
Finish	Plain or Galv.	Plain or Galv.	Plain or Galv.	Plain or Galv.	Plain
Head Dimension	.26"x.23"	.27"x.21"	.34"x.28"	.27"x.21"	1/4" Round
Shank At Head	.13"x.13"	.19"x.114"	.23"x.14"	.19"x.14"	11.5 Ga.
Shank At Point	.07"x.08"	.10"x.07"	.13"x.08"	.10"x.07"	11.5 Ga.
					
Details and lengths of Nails	1 3/4"	2"	2"	2 1/4"	2 1/4"
Penetration	1.5"	1.75"	1.75"	2.0"	2.0"
Holding Power PYROFILL	Wet	16.5	26.5	34.0	28.0
	Dry	139.5	226.0	180.0	277.0

NOTES: 1. Values shown are from tests conducted by USG Research Laboratory.

2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.

3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.

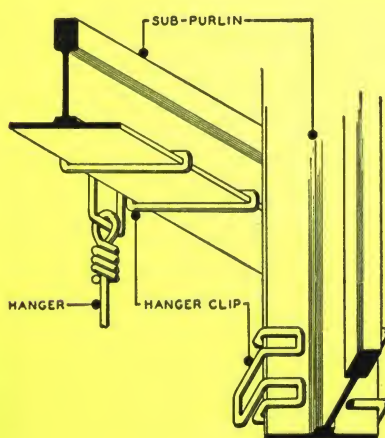
4. Other nails of the same shank size and penetration should give equal holding power.



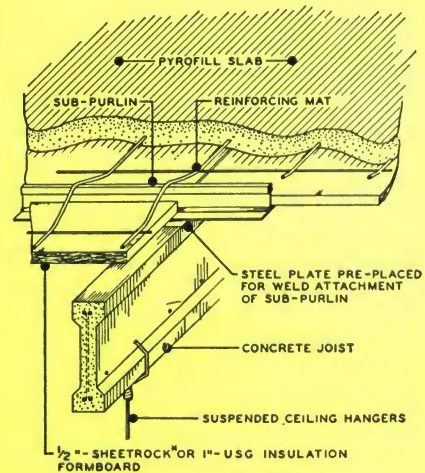
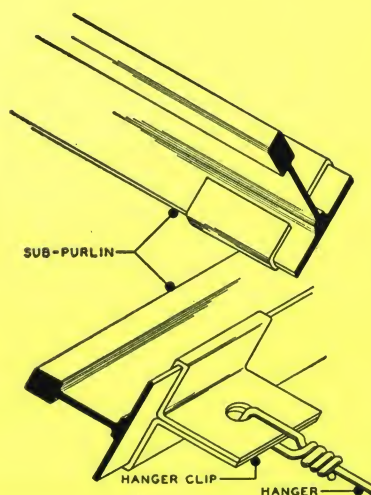
ATTACHMENTS HANGERS & CHANNEL GRILLAGE NOT BY USG ROOF DECK CONTRACTOR

SUSPENDED CEILINGS

SCALE — 3/4" = 1'0"



HANGER DETAILS



1/2" SHEETROCK® OR 1" USG INSULATION FORMBOARD

® T.M. REG. U.S. PAT. OFF.

# PYROFILL ROOF DECKS

## ARCHITECTURAL SPECIFICATIONS POURED GYPSUM ROOF DECK WITH SUB-PURLINS

### SHORT FORM

#### WORK INCLUDED:

The contractor shall furnish all material, labor and equipment and install (select as required):

- a. USG 2½" SHEETROCK PYROFILL
- b. USG 3" PYROFORM PYROFILL
- c. USG 3" Insulation PYROFILL
- d. USG 3" Acoustical PYROFILL
- e. USG 2½" Asbestos-board PYROFILL

poured gypsum roof deck on the entire area of the building. All to be in accordance with standards of the United States Gypsum Company as currently published.

### LONG FORM

#### SCOPE OF WORK:

The contractor shall furnish all labor, material and equipment and install complete the poured gypsum roof decks, together with cants, curbs and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

#### MATERIALS

1. **Steel Sub-purlins:** The steel sub-purlins shall be an approved type capable of carrying the required live load and dead load. All to be cut to length and shop painted one coat of an approved paint. All end joints are to bear on roof supports.
2. **Formboards:** The permanent formboards shall be: (select as required):
  - a. SHEETROCK formboard ½" thick by 32" wide, in lengths equal to main purlin spacings, except where purlin spacings are 10' or greater. In the latter case formboard should be one-half the length of the purlin spaces with approved galvanized or painted tees used to support the cross joints between sub-purlins.
  - b. PYROFORM Mineral Fiber Formboard, complete with steel tees to support end joints where not supported by the sub-structure.

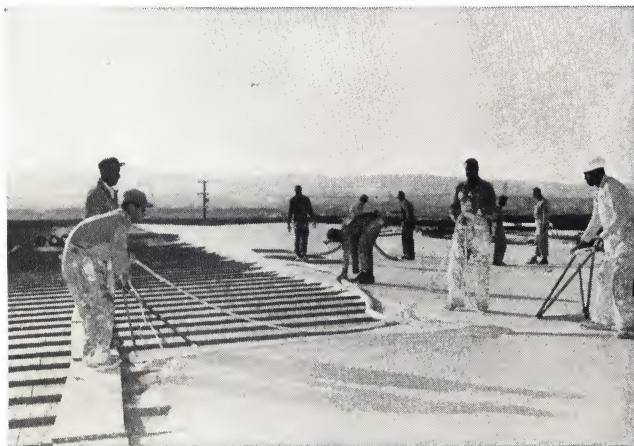
- c. 1" treated USG Insulation formboard 32" wide, in lengths equal to main purlin spacings.
- d. USG Acoustical Formboard, 1" x 12" x 24", for sub-purlins spaced 24⅞" on center.
- e. Cement-asbestos board ¼" thick, 32" wide, 48" long complete with approved galvanized or painted steel tees in the cross joints between sub-purlins.

3. **Reinforcing Mesh:** The reinforcing in the poured gypsum slab shall be a galvanized welded wire mesh having No. 12 gauge longitudinal wires spaced 4" on centers, or similar type with equal or better qualities, having an effective cross sectional area of not less than 0.026 square inch per foot width of slab.

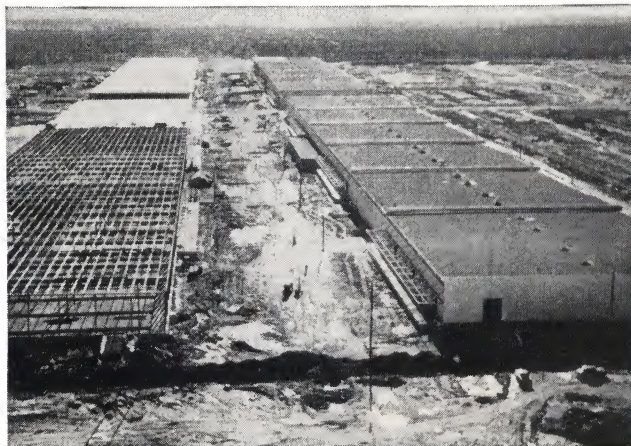
4. **Gypsum Concrete:** The gypsum concrete shall be: USG PYROFILL consisting of calcined gypsum and not more than 12½% by weight of wood chips, shavings or fibers.

#### INSTALLATION

1. **Steel Sub-purlins:** Place and weld each sub-purlin to main purlins at each contact point using ½" long fillet welds placed on alternate sides of sub-purlins where accessible.
2. **Formboards:** Place formboards on flanges of sub-purlins with all end or cross joints supported. Forms to fit neatly on all four edges. Cut forms to fit at walls, curbs and openings as shown or required.
3. **Reinforcing:** Place reinforcing mesh with the No. 12 gauge wires at right angles to the sub-purlins. Lap ends of mesh not less than 6 inches. Sides of mesh are not to be lapped. Cut mesh to fit at all walls, curbs and openings, and carry the mesh into all areas where PYROFILL is poured.
4. **Gypsum Concrete:** Mix PYROFILL with clean water only according to directions on bags. Pour over the forms to an average thickness of not less than 2 inches (2¼ inches over asbestos board). Scream all surfaces to a smooth even plane ready to receive the waterproof roof covering specified in another section. Pour all cants, curbs and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.



PYROFILL being poured by pump mixing methods.



A poured gypsum roof deck installation.



Underside of SHEETROCK PYROFILL roof deck showing sub-purlins.



PYROFILL being poured on a curved roof.

**TECHNICAL INFORMATION**

PYROBAR\*

**GYP SUM PARTITION TILE**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

## DESCRIPTION

PYROBAR is a precast gypsum partition tile. It is made in various thicknesses, both solid and hollow, with indented surfaces to receive plaster.

**Sizes:** 2" x 12" x 30" Solid  
3" x 12" x 30" Hollow  
4" x 12" x 30" Hollow  
6" x 12" x 30" Hollow

Complies with ASTM Designation C52-41 and Federal Specification SS-T-316.

## FUNCTION & UTILITY

**Fireproof**—gypsum is incombustible and will not communicate high temperatures until completely calcined, a very slow process. Fire resistance ratings shown in technical data below.

**Light Weight**—saves structural steel—generally 30% to 50% lighter than other masonry partitions of like thickness. Unit weights shown in technical data below.

**Plaster Bond**—Authoritative tests show that gypsum plaster bonds to PYROBAR Partition Tile with factor of safety of 173.

**Saves Plaster**—the large size, machine moulded units lay accurately to a straight line. Grounds are  $\frac{1}{2}$ " instead of  $\frac{5}{8}$ " or  $\frac{3}{4}$ " as for other masonry partitions.

**Resistance to Sound Transmission**—Increase of sound transmission loss is obtainable by furring one side of partition using USG Resilient Systems (See technical data below and AIA File No's 20-B and 20-B-2)

### Low in Cost Because:

- Material cost is low.
- The large units (2½ sq. ft. surface area) lay into wall fast, thus reducing labor costs.
- Lightness in weight reduces labor costs.
- Fewer joints, saves mortar up to 40%.
- Ease of cutting reduces waste, and lowers cost of alterations or remodeling.
- Requires 20% less plaster than masonry units requiring  $\frac{5}{8}$ " grounds.

## LIMITATIONS OF USE

- PYROBAR, although having a considerably higher compression



strength than 75 lbs. per sq. inch gross area as required by ASTM Designation C52-41, is designed for non load-bearing partitions and should not be used for load bearing construction.

2. Portland cement and lime mortars do not bond adequately with PYROBAR and should not be used for erecting PYROBAR. Use RED TOP\* Gypsum Cement Plaster for plastering and RED TOP Partition Tile Cement for mortar. See specifications.

3. For the reason given above, portland cement or lime plasters should not be used over PYROBAR. Before applying portland cement bedding for ceramic tile, metal lath shall be nailed to PYROBAR. Alternately, other types of masonry, such as structural clay tile may be used as backing for ceramic tile.

4. 2" Solid PYROBAR shall not be used for partitions. Shall be used for furring and column fireproofing only.

"PYROBAR" and "RED TOP" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "PYROBAR" identifies the particular gypsum tile, "RED TOP" identifies the particular gypsum cement plaster, manufactured only by United States Gypsum.

## TECHNICAL DATA FOR GYPSUM PYROBAR PARTITION TILE

PARTITION	Thickness	Weight Per Square Foot (Pounds)	Limiting Height (Feet)	Fire Rating (Hours)*	Average Sound Transmission Loss* (Decibels)
3" Hollow Pyrobar— Unplastered	3 "	11.0	13	1	—
Plastered One Side	3½ "	15.2	13	1½	—
Plastered Two Sides	4 "	19.4	13	3†	39
4" Hollow Pyrobar— Plastered One Side	4½ "	18.0	17	3	—
Plastered Two Sides	5 "	22.2	17	4	43
6" Hollow Pyrobar— Plastered Two Sides	7 "	30.6	30	5 (est.)	—
<b>RESILIENT PARTITION</b>					
3" Hollow Pyrobar— Plastered Two Sides One side furred with metal lath.	5⅞ "	22	13	—	46
3" Hollow Pyrobar— Plastered Two Sides One side furred with gypsum lath.	5¼ "	21	13	—	49
4" Hollow Pyrobar— Plastered Two Sides One Side furred with metal lath.	6⅞ "	25	17	—	50
<b>COLUMN FIREPROOFING</b>					
2" Solid— Plastered One Side	2½ "	15.2	—	4	—
3" Hollow— Plastered One Side	3½ "	15.2	—	4	—

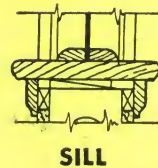
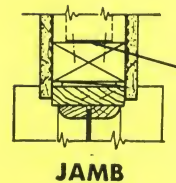
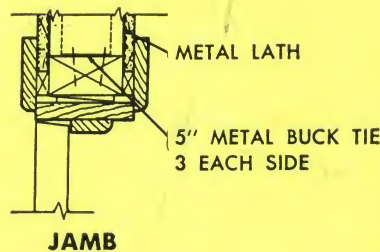
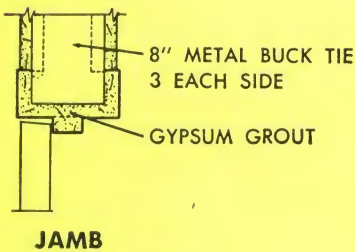
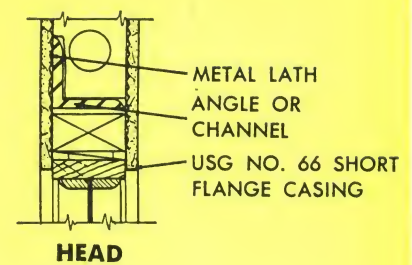
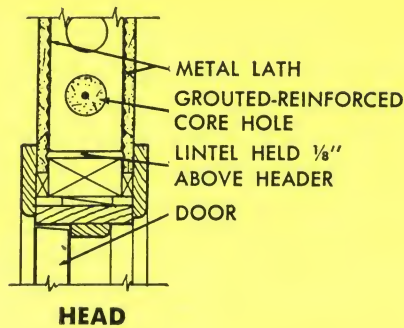
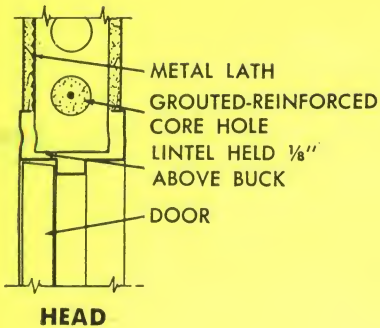
\*All tests made at nationally recognized testing laboratories. All ratings tabulated are based on Pyrobar laid in gypsum-sand mortar and plastered to ½" ground with gypsum-sand (1:3) plaster.

†3" Hollow Pyrobar laid in gypsum-perlite mortar and plastered (two sides) to ½" grounds with gypsum-perlite (100:3½) plaster had a Fire Endurance Time of 3 hours 55 minutes and passed a 4-hour Fire and Hose Stream Test.

# PYROBAR PARTITION TILE

construction details

## DOOR BUCK AND FRAMED OPENING DETAILS



METAL DOOR BUCK

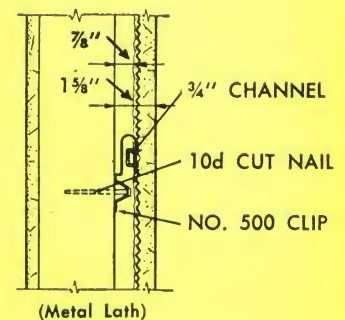
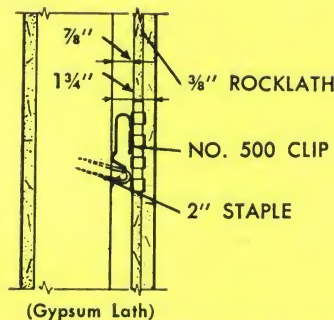
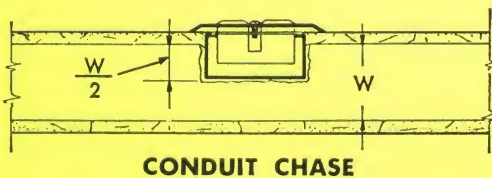
WOOD DOOR BUCK

BORROWED LIGHT

Scale 1-1/2" = 1'-0"

construction details

## MISCELLANEOUS



RESILIENT FACING

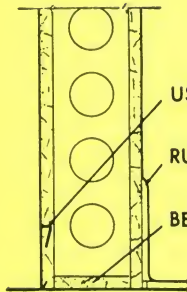
## PLAN SECTIONS

Scale 1-1/2" = 1'-0"

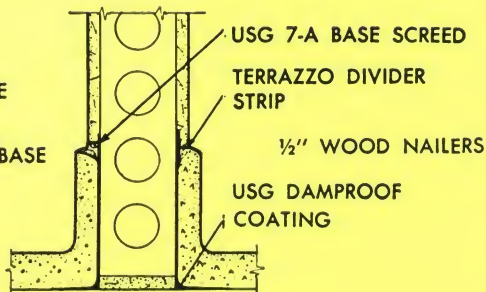
# PYROBAR PARTITION TILE

construction details

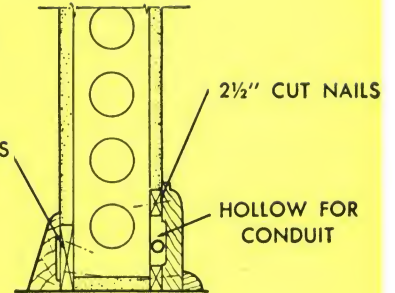
## FLOOR BASE AND TRIM DETAILS



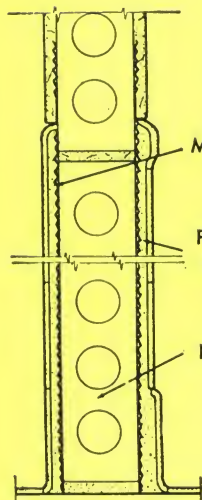
METAL AND RUBBER BASE



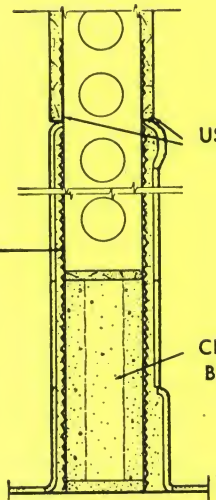
CEMENT AND TERRAZZO BASE



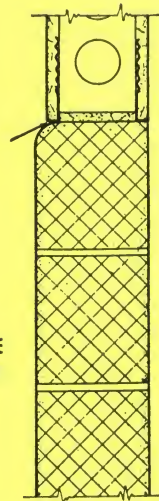
WOOD BASE



CERAMIC TILE WAINSCOT



CERAMIC TILE WAINSCOT  
(Alternate)



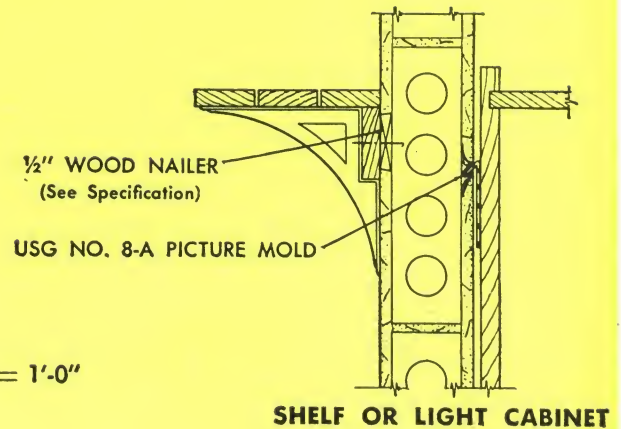
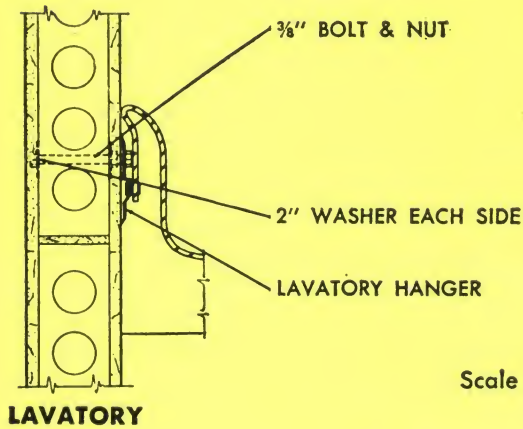
STRUCTURAL GLAZED TILE WAINSCOT

Scale 1-1/2" = 1'-0"

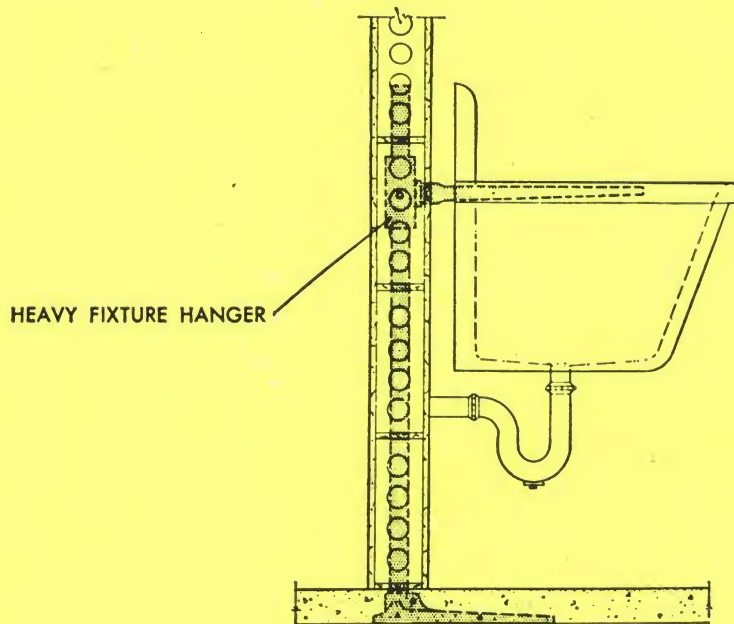
# PYROBAR PARTITION TILE

construction details

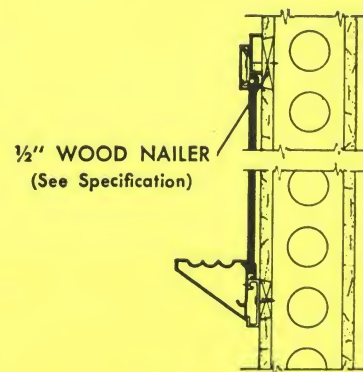
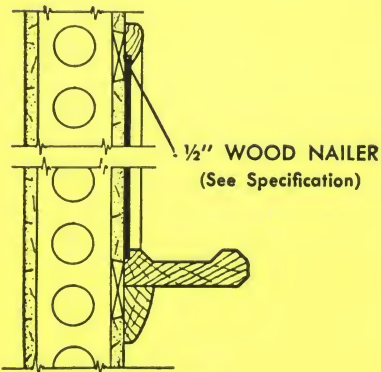
## MISCELLANEOUS FIXTURE ATTACHMENTS



Scale  $1\frac{1}{2}" = 1'-0"$



Scale  $\frac{3}{4}" = 1'-0"$

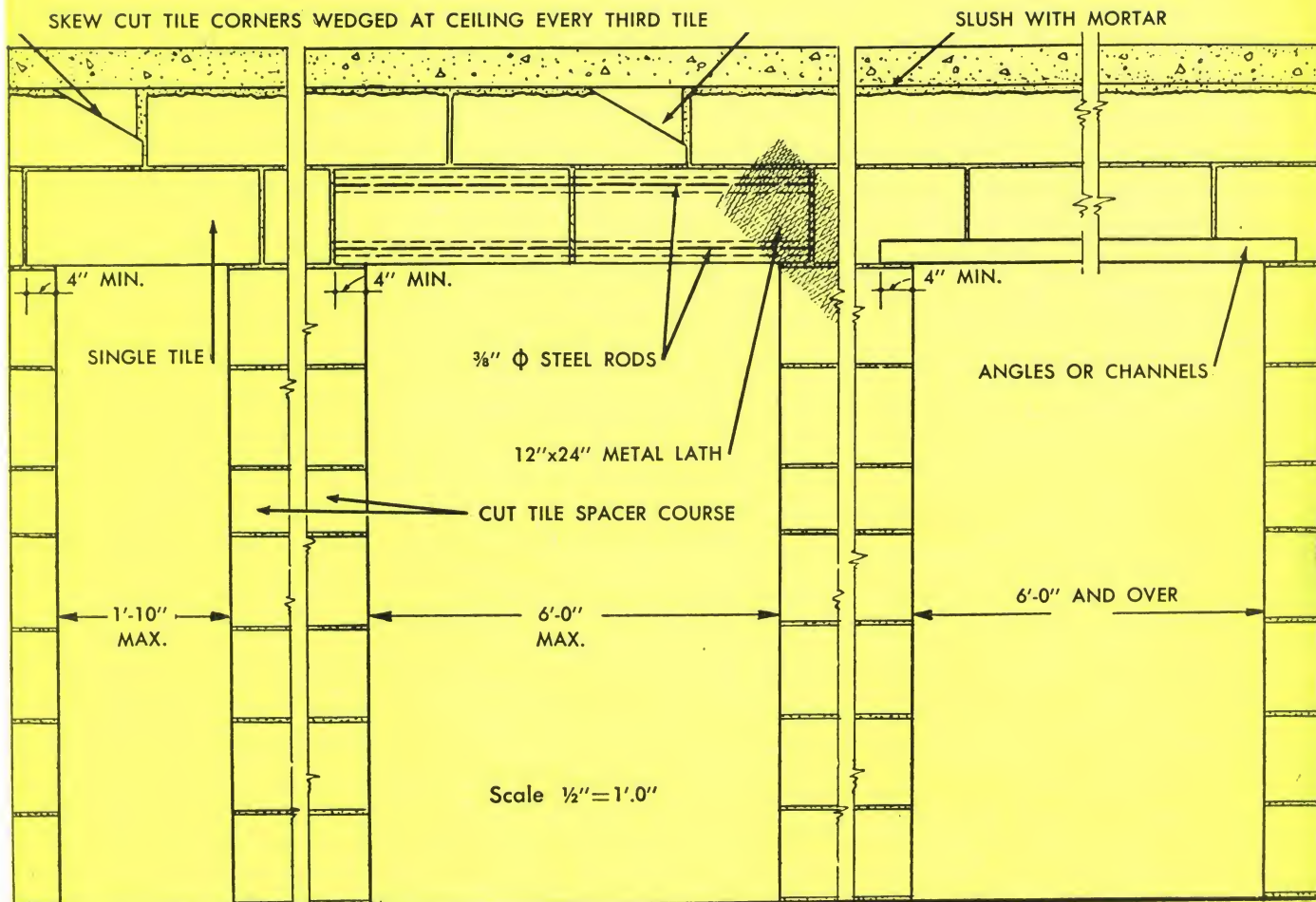


Scale  $1\frac{1}{2}" = 1'-0"$

# 

construction details

## 



**SINGLE TILE  
LINTEL**

**REINFORCED GYPSUM TILE  
LINTEL**

**ANGLE OR CHANNEL  
LINTEL**

### 

1. When lintels are constructed of a single gypsum tile (max. opening 1'-10") a minimum bearing of 4" must be provided at each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.
2. Gypsum tile lintels are constructed by filling the top and bottom core holes with gypsum mortar and reinforced with continuous  $\frac{3}{8}"$

diameter steel rods.

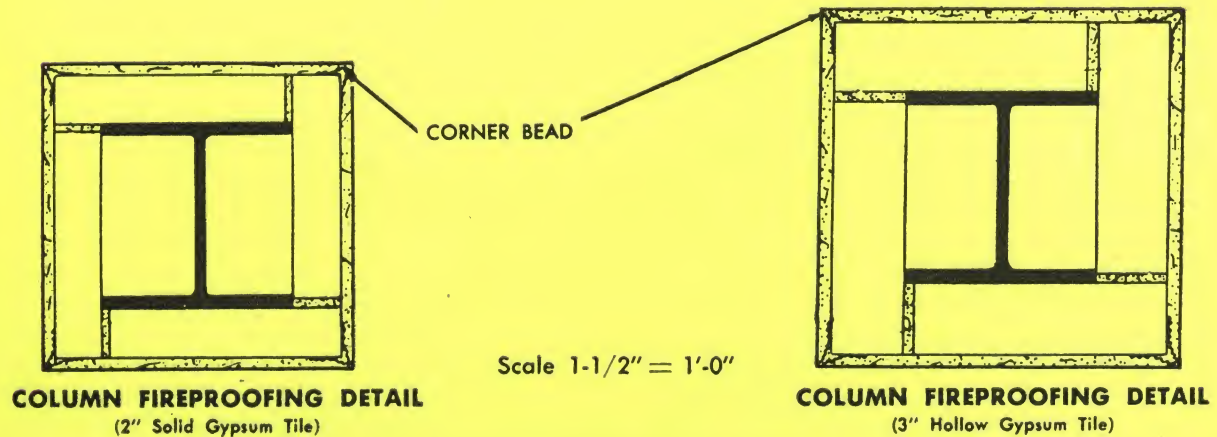
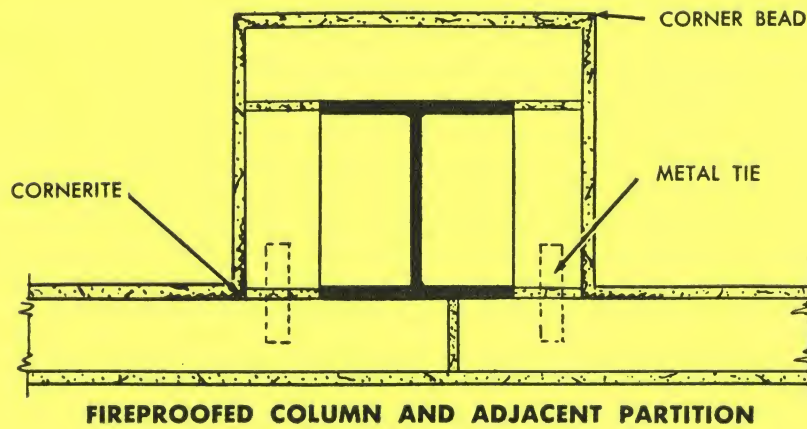
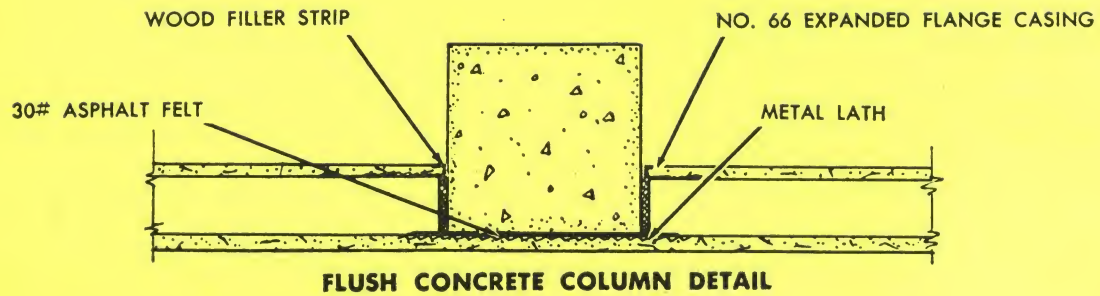
3. For openings greater than 6'-0" a steel angle or channel of sufficient size must be used to form the lintel. Upstanding legs of channel or angle must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.

4. Wedge top course of gypsum tile partition to construction above using skew cut corners every third tile.

# PYROBAR PARTITION TILE

construction details

## COLUMNS



# MASONRY SPECIFICATIONS FOR PYROBAR PARTITION TILE

## SHORT FORM SPECIFICATION

**Scope:** Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

### Materials:

**Gypsum Partition Tile** shall be PYROBAR, of sizes indicated as manufactured by United States Gypsum Company.

**Cement** for mortar shall be RED TOP Partition Tile cement as manufactured by United States Gypsum Company.

**Sand** for mortar shall be clean and sharp, complying with ASTM Designation C-35-54 T.

### Erection:

Erection of PYROBAR tile shall be in accordance with current directions as printed by the U. S. Gypsum Company.

## LONG FORM SPECIFICATION

**Scope:** Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

### Materials:

**Gypsum Partition Tile** shall be PYROBAR, of sizes indicated, as made by United States Gypsum Company.

**Cement** for mortar shall be RED TOP Partition Tile cement as made by United States Gypsum Company.

**Sand** for mortar shall be clean and sharp, complying with ASTM Designation C-35-54 T.

### Erection:

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door bucks are erected and rough plumbing and wiring is in place, the first course shall be laid with core holes horizontal by bedding in mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in  $\frac{1}{2}$ " thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and mortar in head joints shall be  $\frac{1}{2}$ " thick full joints. Cut all joints flush. Use of broken tile shall be kept at a minimum. Use these tiles at openings, etc. Chinks and crevices shall be slushed full with mortar.

Partitions shall be well anchored to intersecting masonry walls  $12\frac{1}{2}$ " on center vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile except over door or borrowed light openings. Slush mortar between tile and ceiling.

PYROBAR shall not be chased out more than half its thickness for conduit or other piping and size of such conduit and pipe shall be such that metal lath may be placed flush over the chase and secured in place.

Rough wood door bucks shall be anchored to the PYROBAR with 16d cut nails or 5" buck ties, three each side (approximately 12" from top and bottom and at center) laid in the mortar joints. Lintel construction shall be held  $\frac{1}{8}$ " above head of buck and not slushed with mortar.

Steel door bucks shall be anchored to the floor and to the PYROBAR with buck ties furnished by door buck manufacturer, minimum three each side (approximately 12" from top and bottom and at center) laid in mortar joints. Space between tile and door buck jamb shall be slushed full with mortar as tile is laid into buck. Lintel construction shall be held  $\frac{1}{8}$ " above top of buck and not slushed with mortar.

## OPTIONAL INCLUSIONS

### 1. Lintels shall be formed as follows:

**A.** For openings up to 1'-10" with a single gypsum tile providing at least 4" bearing on each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.

**B.** For openings over 1'-10" up to 6'-0" with a gypsum tile lintel consisting of two or more full pieces of tile with top and bottom

core holes filled with gypsum mortar and reinforced with continuous  $\frac{3}{8}$ " diameter steel rods.

**C.** For openings greater than 6'-0" with a steel angle or channel of sufficient size to form the lintel. Upstanding legs of angle or channel must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.

**2. Lightweight Fixtures** (shelves, cabinets, chalkboards, etc.) shall be attached to a  $\frac{1}{2}$ " wood nailer strip or USG No. 8-A Picture mold which has been secured to PYROBAR wall (see detail). If  $\frac{1}{2}$ " wood nailer strips are used, these strips shall be nailed to vertical  $\frac{3}{4}$ " x 12" x tile width nailing blocks which are nailed to end of tile before setting tile in wall. Additional nails project into head joint from face of these vertical blocks (no detail shown).

**3. Medium Weight Fixtures** (lavatories, water closets, heavy shelves, etc.) shall be secured to PYROBAR partitions with  $\frac{3}{8}$ " steel bolts through the tile, using 2" steel washers on both sides of tile. Set bolts in place before plastering.

**4. Heavy Fixtures** shall be supported by a steel angle grillage or commercial heavy fixture hangers built into the PYROBAR partition. (See detail.)

**5. Wood Grounds** for plastering shall be nailed into tile with  $2\frac{1}{2}$ " (8d) cut nails at base and around openings to provide a  $\frac{1}{2}$ " total thickness of plaster.

### 6. Base shall be:

**A.** USG  $2\frac{1}{2}$ " Metal Base secured to PYROBAR partition with USG masonry base clip (see detail).

**B.** Asphalt, rubber or vinyl tile applied with mastic to finished plaster (see detail).

**C.** Cement or terrazzo base applied over metal lath secured to the first course of PYROBAR which has been coated with USG Dampproof coating from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to get thorough application at joint of PYROBAR with rough floor (see detail).

**D.** Wood base (plain or hollow for conduit) shall be nailed to  $\frac{1}{2}$ " wood nailers secured to face of PYROBAR with  $2\frac{1}{2}$ " (8d) cut nails. (See detail.)

## SPECIAL CONDITIONS

**1.** When columns or beams are located in line of partitions so that plane of plaster continues from the PYROBAR across the face of the columns or beams, cover face of columns or beams with 30# asphalt felt or equal membrane and cover this membrane with diamond mesh metal lath. Fasten metal lath to PYROBAR. Mineral wool filler strips shall be placed between ends of PYROBAR and columns (see detail).

**2.** Where partitions occur beneath constructions where deflections downward of the construction are possible, provisions must be made at head of partitions for relief of transmitted loads.

**3. Resilient Facings**—Where resilient facings of metal lath or gypsum lath are to be used refer to USG AIA 20-B Building Steel Products or USG AIA 20-B-2 for specifications and details.

**4.** Where a ceramic tile facing is to be applied to PYROBAR partitions nail metal lath for Portland Cement bed to face of PYROBAR to full height of ceramic tile application. Use USG 66 short or expanded flange casing at juncture of gypsum plaster and ceramic tile (see details).

**5.** 12" x 24" striplath shall be secured to the tile diagonally over corners of all openings.

**6.** 3" x 3" cornerite shall be used in all internal plastered corners except where PYROBAR partition abuts load bearing walls or partitions.

## COLUMN FIREPROOFING

**1.** PYROBAR gypsum tile (2" solid) (3" Hollow) shall be laid plumb and true and corners built log cabin fashion with tile interlocking.

**TECHNICAL INFORMATION**

# USG<sup>®</sup> STEEL ROOF DECKS



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG STEEL ROOF DECKS

## DESCRIPTION

USG Steel Roof Decks are prefabricated units, formed by cold rolling low carbon steel sheets into ribbed type interlocking panels, ready for installation as they come to the job. USG Steel Roof Deck, ribbed panels, are made 18 inches wide, with nominally 1½" deep ribs, and in standard lengths from 5'8" to 27' 2½" inclusive. Each roof deck panel is shop painted light gray by flow coating with a rust inhibitive zinc chromate paint oven dried.

USG Steel Roof Deck panels are available in either No. 18,

No. 20 or No. 22 U. S. Standard gauges shop painted and in No. 18 or 20 gauge galvanized.

All essential accessories such as ridge and valley plates, cover plates, cants, curbs, sump pans or plates are also available in the same shop painted or galvanized steel as shown in detailed drawings.

USG Steel Roof Deck is manufactured in accordance with the Standards and Specifications of the Metal Roof Deck Technical Institute.

## FUNCTION AND UTILITY

**Light Weight:** USG No. 18 gauge painted steel roof deck, ribbed panels, weigh approximately 315 pounds per 100 sq. ft. of roof area, No. 20 gauge approximately 235 pounds, and No. 22 gauge approximately 200 pounds—galvanized slightly more. This light dead load permits savings in the structural steel framing.

**Strength:** All of the high strength of steel is used to advantage in the ribbed design of USG Steel Roof Decks. A stiffening bead is formed in the top flange between the ribs to resist warping or buckling under concentrated loads.

A table of safe total loads in pounds per sq. ft., the weight per square, the moment of inertia ( $I^{''4}$ ), the section modulus ( $S^{''3}$ ) and the insulation values, "U" for the complete roof including built up roof covering, is shown in the Technical Data at the bottom of this page.

**Fire Resistance:** USG Steel Roof Decks cannot burn or other-

wise support combustion. For fire resistance ratings, see page three.

**Permanent:** USG Steel Roof Decks are prime coated with a gray rust inhibitive, oven dried paint. Proper job painting and maintenance will give this deck a normal life expectancy equal to the life of the building. (Galvanized deck is supplied unpainted.)

**Adaptability:** USG Steel Roof Decks are ideal on flat, warped and low pitched roofs. Insulation and built-up roof coverings are required.

**Appearance:** The painted surfaces of the deck plates and accessories, and the repeating rib pattern can provide a pleasing light reflective undersurface.

**Maintenance:** The shop painted surfaces can be washed or repainted as maintenance requires.

**Low Cost:** Material costs are low. Speed of erection results in low labor costs. Light dead load conserves structural steel.

## RECOMMENDATIONS & LIMITATIONS OF USE

**Insulation:** A rigid type of insulation is required over steel roof decks under the built-up roof covering.

**Acid Fumes, Excessive Temperature and Moisture Conditions:** Special consideration must be given before using steel roof decks when they are exposed to:

1. Acid or acid fumes detrimental to paint or steel.
2. Excessive temperature.
3. Excessive moisture or humidity conditions.

For further information consult our nearest Industrial Sales Engineer or Architect Service Representative.

**Venting of Enclosed Spaces:** All enclosed spaces beneath roof decks should be adequately vented to the outside. Such

venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Ventilating Engineers for information on venting of attic spaces. (Chapters 10 & 12).

**Cantilever for Rakes and Eaves:** Based on deflection not to exceed 1/240 of the span (cantilever) the maximum overhang for our steel deck with a total load of 35 p.s.f. (29 p.s.f. live load) is:

18 ga:	4'-0"
20 ga:	3'-4"
22 ga:	3'-2"

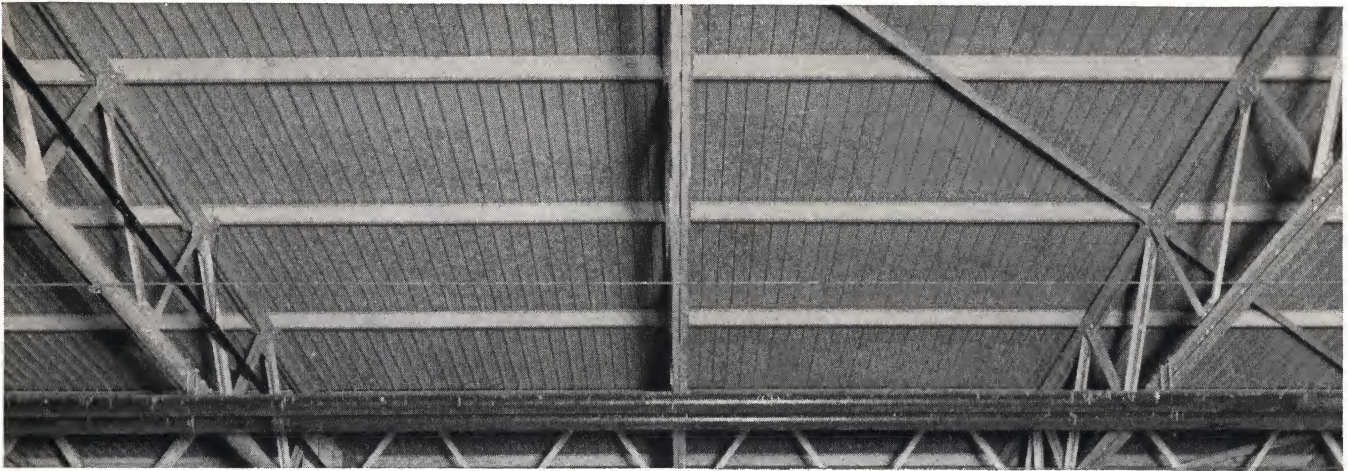
## TECHNICAL DATA

Type of Span	Ga.	SAFE TOTAL LOADS IN LBS. PER SQ. FT.									PROPERTIES			
		PURLIN SPACING									Type	Wt. Lbs. Per Sq.		I <sup>''4</sup>
		5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"		Black	Galv.	S <sup>''3</sup>
Continuous	18	138	114	96	82	70	61	54	48	42	18 ga.	315	345	.277
	20	102	84	71	60	52	45	40	35	31	20 ga.	235	265	.195
	22	86	71	60	51	44	38	34	30	—	22 ga.	200	—	.156
Two Spans	18	111	91	77	65	56	49	43	38	34	Insulation—"U" Value			
	20	82	67	57	48	42	36	32	28	25				
	22	69	57	48	41	35	30	—	—	—	Btu/hr./s'f/°F Diff.—INCLUDING ROOFING			
Simple	18	111	91	77	65	56	49	41	35	31	None	½"†	1"†	1½"†
	20	82	67	57	48	42	36	31	26	23	0.94	0.39	0.24	0.18
	22	69	57	48	41	35	30	—	—	—	†Fiberboard Insul.—K=.33 over steel deck			

NOTE: None of these loads will produce a stress greater than 18,000 psi or a deflection due to live load greater than 1/240 of the span. A 6 psf dead load representing the weight of the deck, insulation, roofing, etc., was subtracted from total loads when determining deflections. In accordance with specifications of the Metal Roof Deck Technical Institute:

- (a) Only ¾ of the width of the top compression flange for 18 gauge, and ¾ for 20 gauge have been used as being effective in resisting bending.
- (b) A moment coefficient of 1/10 has been used for 3 or more spans, and ⅓ for two spans and simple span.
- (c) A deflection coefficient of 3/384 has been used for all except simple spans, and 5/384 for simple spans.

# USG STEEL ROOF DECKS



Application over Steel Beams



Application over Bar Joist

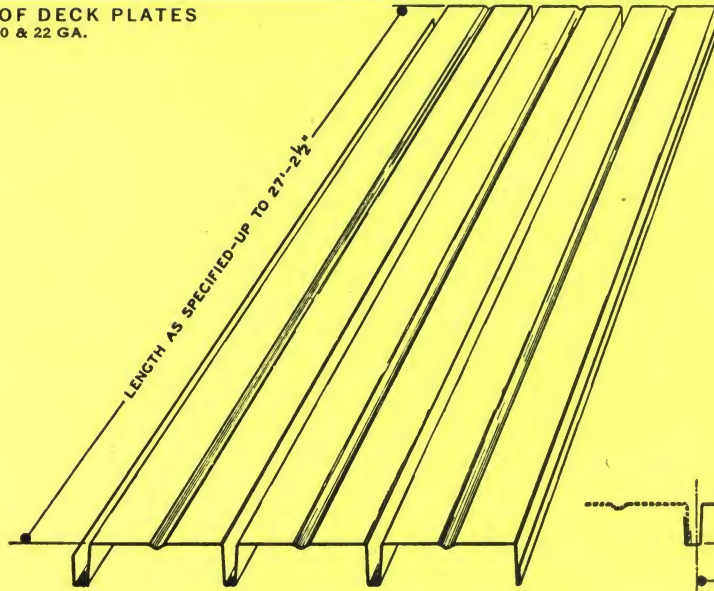
## FIRE-RESISTANCE RATINGS—STEEL ROOF DECK CONSTRUCTION

Summary of the results of a series of fire-tests conducted at National Bureau of Standards—Washington, D. C.

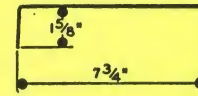
Roof Materials Applied Over Steel Roof Deck	Suspended Ceilings of Metal Lath & Plaster	Fire Resist- ance Rating	Authority
(a) 2" Vermiculite concrete (or equivalent)	1" Vermiculite—gypsum plaster on metal or wire lath	4 hrs.	National Bureau Standards Test No. 60, 1/31/49 Report No. TR 10235-2FP 2688
(b) Minimum 1¾" insulation board of shredded wood, bonded with portland cement	1" Vermiculite—gypsum plaster on metal or wire lath	3½ hrs.	
(c) Minimum 1" insulation as described in item (b) above	1" Vermiculite—gypsum plaster on metal or wire lath	3 hrs.	
(d) Minimum 1" insulation board of felted glass fiber	1" Vermiculite—gypsum plaster on metal or wire lath	2 hrs.	
(e) Minimum 1½" wood fiber board insulation	1" sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 58 11/29/46
(f) Minimum 1½" wood fiber and cement binder insulation	¾" sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 56 11/27/45
(g) Minimum 1" wood fiber board insulation	¾" sanded gypsum plaster 1:2, 1:3 mix	1½ hrs.	N.B.S. Test No. 59 1/15/46

# USG STEEL ROOF DECKS

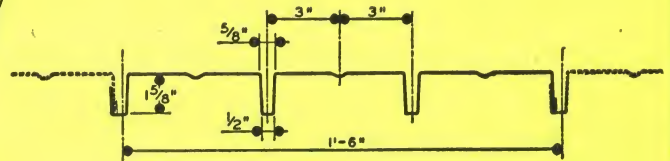
## ROOF DECK PLATES 18, 20 & 22 GA.



STANDARD STEEL  
ROOF DECK PLATE

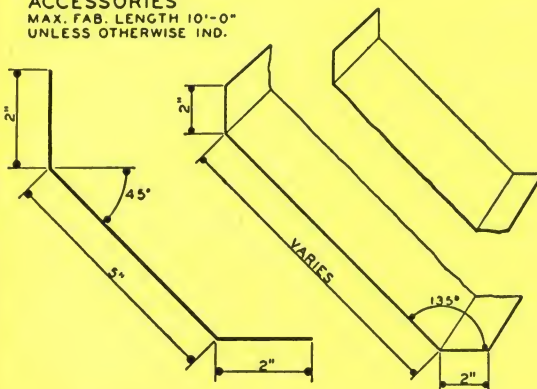


FILLER PLATE



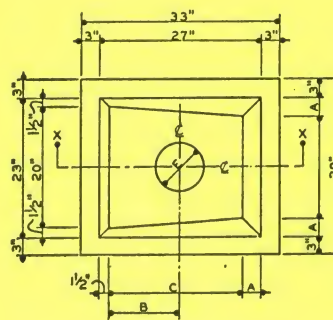
TYPICAL CROSS SECTION  
THRU ROOF DECK PLATE

## ACCESSORIES MAX. FAB. LENGTH 10'-0" UNLESS OTHERWISE IND.

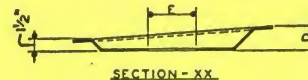


METAL CANT STRIP  
20 GA.

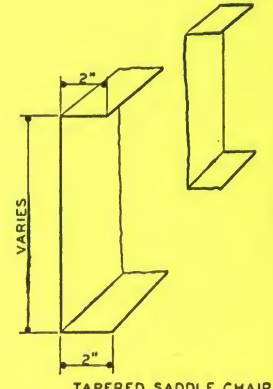
CANT SADDLE  
18 & 20 GA.



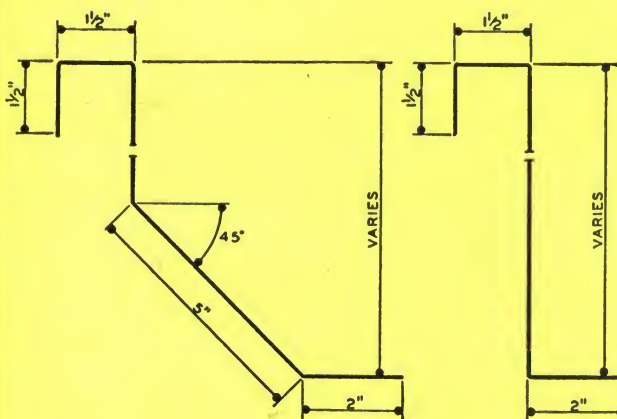
DIMENSIONS - A, B, C, D,  
& E VARY



SUMP PAN - RECESS TYPE  
14 GA.

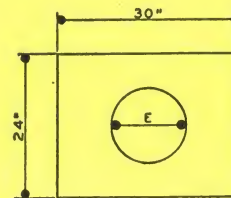


TAPERED SADDLE CHAIR  
18 GA.

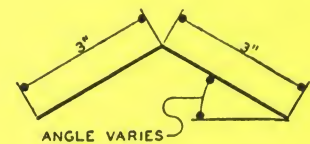


METAL CANT CURB  
18 GA.

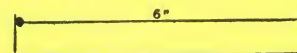
METAL CURB PLATE  
18 GA.



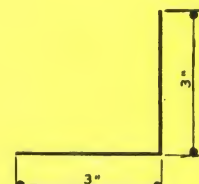
SUMP PLATE  
14-GA.



RIDGE OR VALLEY PLATE  
20 GA.



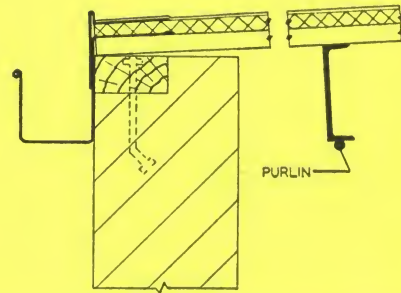
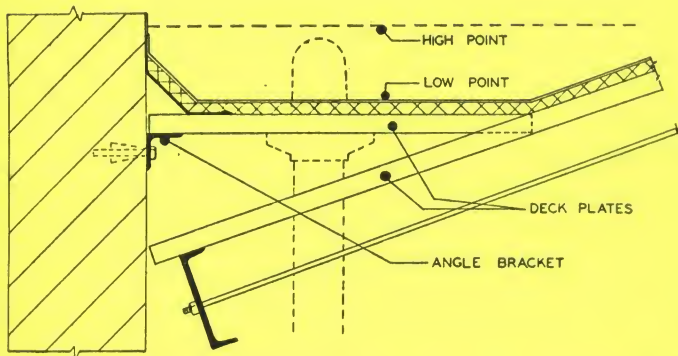
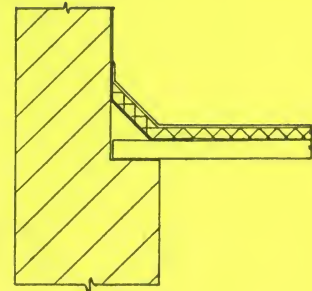
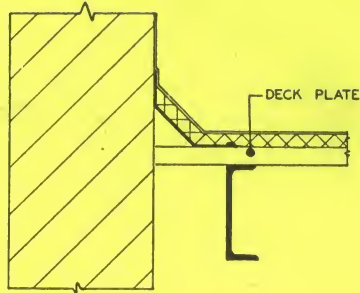
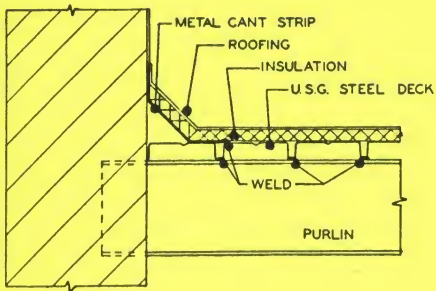
COVER PLATE  
20 GA.



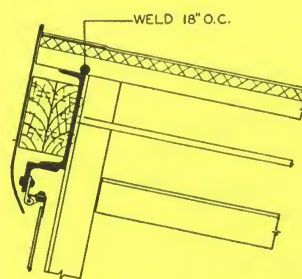
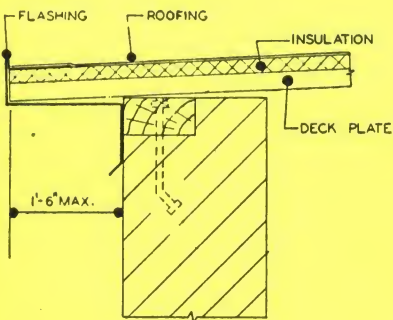
UTILITY ANGLE  
20 GA.

# USG STEEL ROOF DECKS

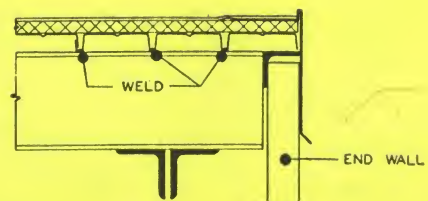
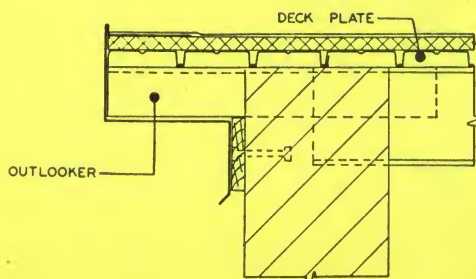
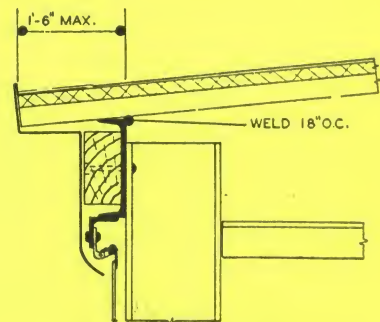
## PARAPET AND END WALL DETAILS



## EAVE AND GABLE DETAILS



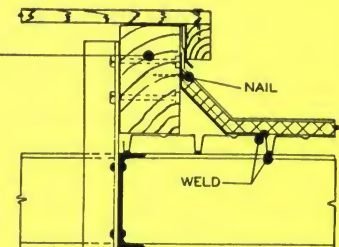
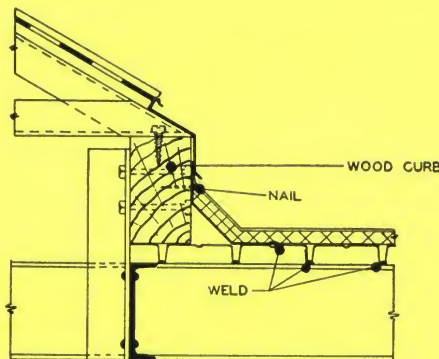
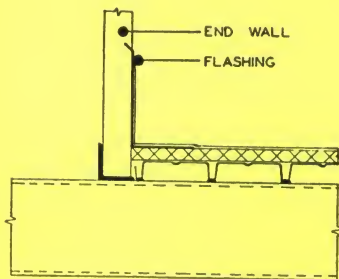
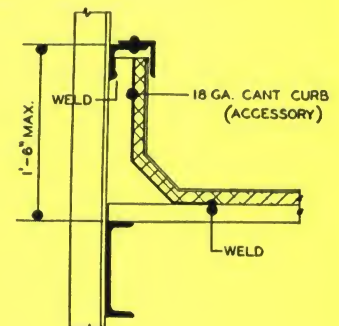
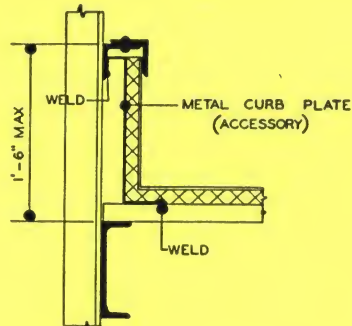
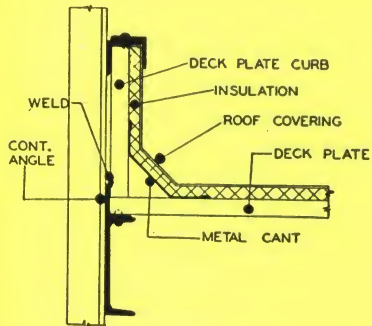
SAWTOOTH EAVE



MONITOR END WALL

# USG STEEL ROOF DECKS

## CURB DETAILS

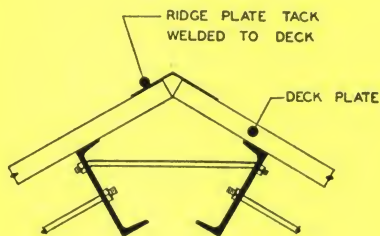


MONITOR END WALL

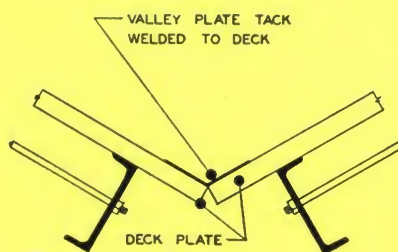
SKYLIGHT DETAIL

SCUTTLE DETAIL

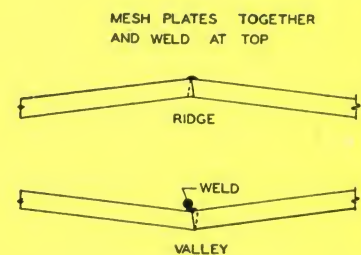
## MISCELLANEOUS DETAILS



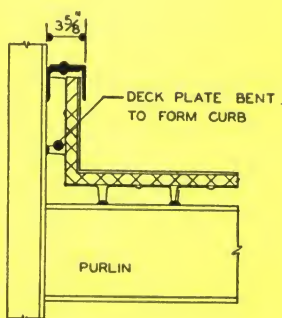
RIDGE DETAIL



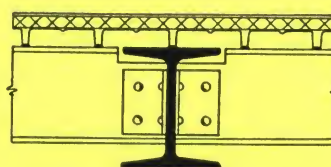
VALLEY DETAIL



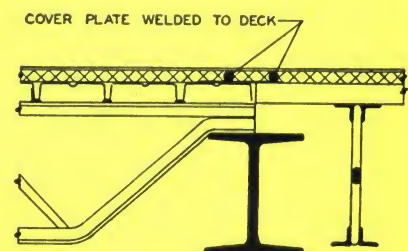
WHERE SLOPE IS LESS THAN  
1 1/2" PER 1'-0"



ALTERNATE CURB DETAIL



NOTES: PURLINS SHOULD BE  
FRAMED TO BEAM SO  
THAT FLANGES ARE  
FLUSH TOP

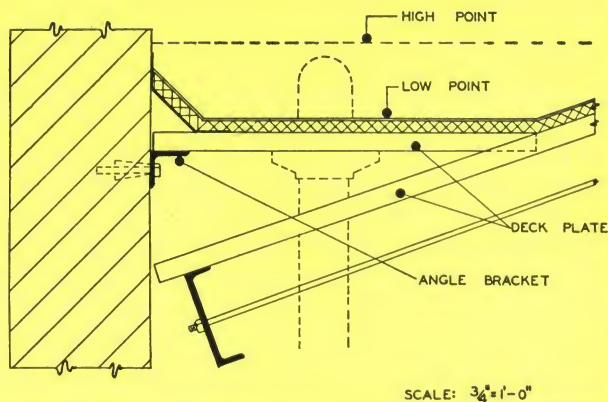
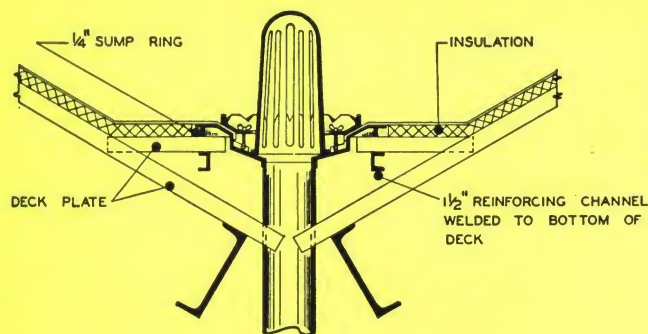


DETAIL SHOWING CHANGE OF  
DIRECTION OF JOISTS

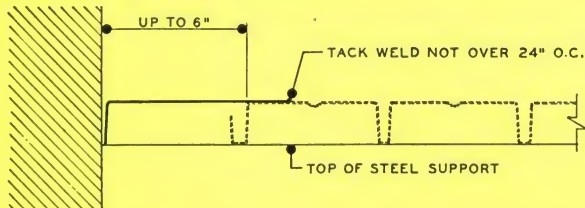
SCALE 3/4" = 1'-0"

# USG STEEL ROOF DECKS

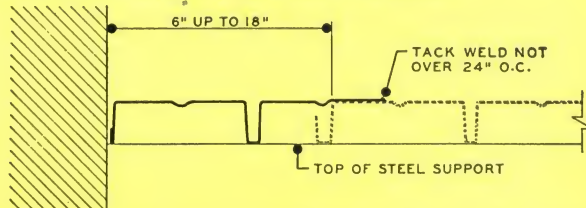
SADDLE AND DOWNSPOUT DETAILS



FILLER PLATE APPLICATION



FIELD CUT DECK PLATE APPLICATION



## DIRECTIONS FOR WELDED APPLICATION

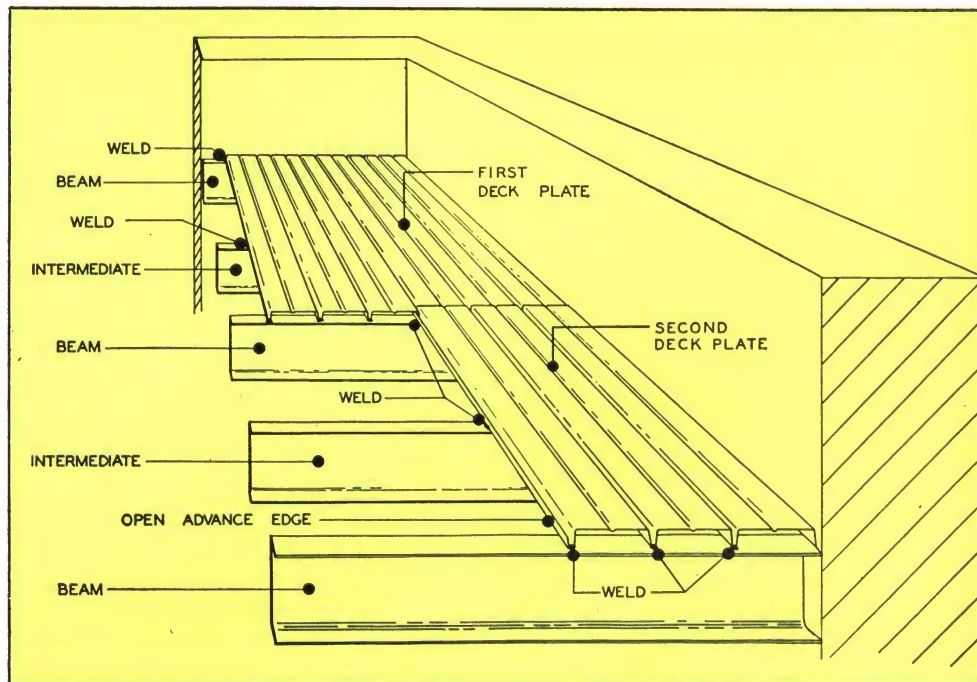
Placing diagram showing the number, length and locations of roof deck plates and accessories should be made for each installation. This placing diagram, together with a bill of materials, will be prepared by U.S.G. if complete plans and specifications are furnished for the purpose. The customer may prepare his own shop drawings and bill of materials, if he prefers.

USG Steel Roof Decks shall be installed in accordance with the placing diagram. Otherwise, shortage of some sizes and overage of others may result.

**FIRST**—Start placing roof deck plates at the low point, usually in a corner at the end of the building. Place the first plate with the open channel flange advancing. Weld the plate to the supporting steel with one weld at each rib at the ends and one weld at each intersection of the advancing side with intermediate purlins. Lay the second plate in the starting row, overlapping the ends at the joint not less than 2" and mesh completely. Weld each rib of the advancing end and the side at each intermediate purlin. Continue placing and welding plates in the first row in like manner well in advance of succeeding rows.

**SECOND**—Start placing the second row of plates beginning at the original starting point, place the straight flange into the open channel flange of the first plate and adjust to make a full contact of the joining flanges. Weld the ends at each rib and the advancing side of each plate at each intersection with intermediate purlins.

**THIRD**—Continue placing plates in succeeding rows in like manner, keeping each row in advance of the following row to facilitate lap-



ping and meshing of the plates together over purlins.

**FOURTH**—Close last row by: (a) cut standard 18" wide deck plates lengthwise in the field allowing from 2 to 3 inches overlap on preceding plate. Weld ends of ribs at purlins and also weld overlaps to preceding deck plate not more than 24" on centers, or (b) install filler plates (furnished by United States Gypsum Company) overlapping the preceding plate as required and weld to the preceding steel roof deck plate with welds not more than 24" on centers.

# USG STEEL ROOF DECKS

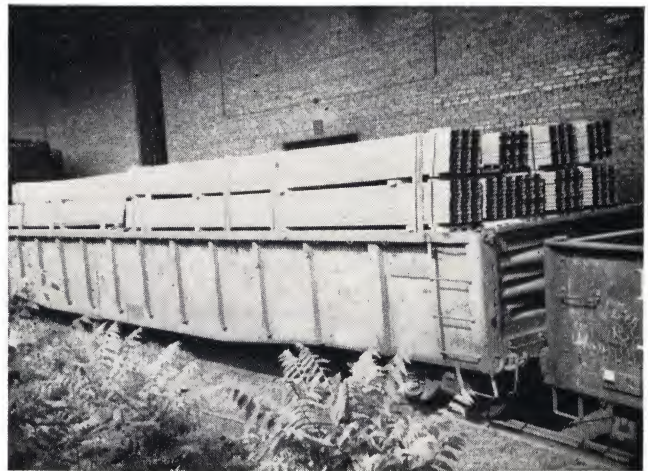
**FIFTH**—Install accessories as follows:

**USG Steel Roof Deck Plates** used as curbs and saddles are to be installed in substantially the same manner as previously described for the roof proper, except that welds are to be made on the top of the plates when ends of ribs are inaccessible.

**Sheet Metal Accessories**—Install cant strips, ridge and valley plates, cover and closure plates, curbs, utility angles, sump plates, etc., as indicated on the drawings by

welding to the supports with welds not more than 24" on centers and staggered on opposite sides where possible.

**Insulation Anchorage**—Where roof pitch is 3" to 12" and over, install pronged type clips in the rib openings. Clips are to be spaced not more than 18" on centers in the direction of the width of the roof deck plates and not more than 36" on center in the direction of the length of the roof deck plates, i.e. not less than one clip anchor for each 4.5 square feet of sloped roof deck area.



**UNITIZED LOADING** is a service offered with USG Steel Roof Deck. This feature reduces material handling costs on the job and reduces the possibility of damage to the shape or surface of the deck while being placed.

## ARCHITECTURAL SPECIFICATIONS

**General**—All principal roof framing, including trusses, purlins, beams, framing around openings larger than 12" in diameter, and all trimming at curbs, sills, and walls, will be done by others. See Specifications for Structural Steel.

### SCOPE

Unless otherwise specified, all roof areas are to be covered with USG Steel Roof Deck. All deck is to be left complete, ready for application of the roof insulation and built-up roofing.

### MATERIALS

**Roof Deck Plates**—Shall be of (No. 18) (No. 20) (No. 22) gauge steel having nominal 1½" deep ribs, 6" on centers, and made in units 18" wide by lengths to fit purlin spaces and shall be manufactured by United States Gypsum Company.

**Accessories**—All cant strips, ridge and valley plates, utility angles and cover plates, etc., as indicated, shall be 20 gauge steel fabricated to sizes and shapes indicated and shall be manufactured by United States Gypsum Company.

**Curbs**—Shall be of (No. 18) (No. 20) (No. 22) gauge steel (Roof Deck Plates) (Sheets formed to sizes and shapes indicated).

**Optional**—Sump Plates where indicated shall be fabricated of 14 gauge steel sheets according to manufacturers' standards.

**Paint**—All USG Steel Roof Deck plates and sheet metal accessories, etc., are to have one shop coat of rust inhibitive zinc chromate paint, applied at the factory and oven dried to protect the steel during shipment.

### ERECTION

All USG Steel Roof Deck plates and accessories are to be installed by welding in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

**Optional**—For use of clips in lieu of welding:

All USG Steel Roof Deck plates and accessories shall be installed with clips in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

### Notes to Architect:

1. When USG Steel Roof Deck is installed by welding, it may also be advisable to use spacer wedges. When pitch of roof is more than 3" rise to 12", anchorage clips for insulation are recommended.

2. Galvanized steel decks (unpainted) No. 18 or No. 20 gauge are available on specification.

TECHNICAL INFORMATION

GRATE-X\*

**EXPANDED METAL  
FLOOR GRATING**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# GRATE-X\*

## DESCRIPTION

USG GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation. Designed especially for use as a lightweight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

U.S.G. Grate-X is also made from 1/4" type 5052 aluminum plate for uses where the inherent properties of aluminum are required in addition to the advantages of Grate-X.

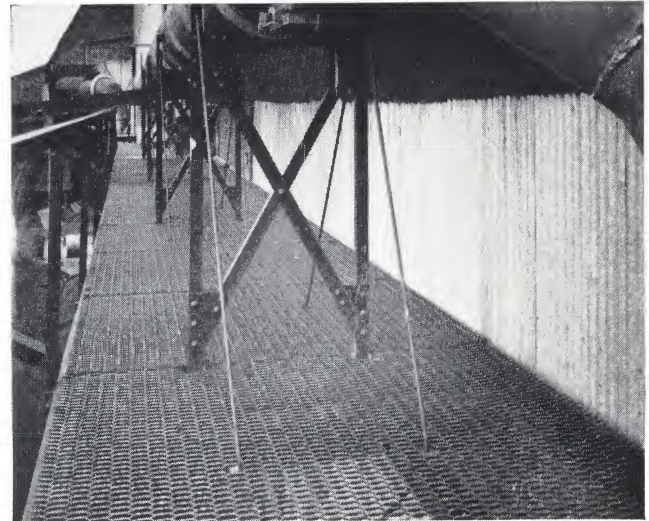
## FUNCTION AND UTILITY

**Economical:** Its low cost and light weight, combined with high strength, make for a most economical construction. A wide selection of sizes and weights is available.

**High Strength:** Formed like a truss, every interconnected strand acts like a structural member distributing the load in many directions, over a considerable area. There are no riveted or welded joints.

**Easily Installed:** The uniform pattern; ease of cutting with torch, bolt cutters or hacksaw; ease of anchorage with spot welding or bolting and ease of shaping to curved surfaces make for quick, easy installation. Holes may be cut or patched, and alterations made at will. Ease of fabrication permits stocking at user's plant for use as needed for alterations, additions, etc.

**Extra Safety:** The angular ridged surface formed by the multiple junctions of strands provides excellent anti-slip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Snow and ice break off easily under foot, water and oil drain off readily; thus



GRATE-X used for Industrial Walks

maintaining anti-slip qualities under adverse conditions.

**Large Open Area:** The angular position of the strands and bonds permits ready passage of light and air. Dust cannot accumulate. The percentage of open area is actually as great at an entrance angle of 45 degrees as at 90 degrees.

**Easily Maintained:** The angular position of strands and bonds and large open area make GRATE-X virtually self-cleaning. All surfaces can be readily reached for painting with brush or spray gun. For further details, consult the nearest USG sales office.

"GRATE-X" and "EXPAND-X" are trademarks owned by United States Gypsum and identify the particular types of expanded metal manufactured only by United States Gypsum.

GRATE-X Technical Data																
ALL DIMENSIONS ARE GIVEN IN INCHES																
CARBON STEEL																
STYLE (psf)	DIAMOND SIZE WIDTH X LENGTH	OPENING SIZE	STRAND WIDTH	STRAND THICK- NESS	GRATE-X DEPTH	PERCENT OPEN AREA	SHEET SIZE									
							WIDTH (SWD)	LENGTH (LWD)								
3.0 lb.	1.44 x 5.0	1.09 x 3.31	.23	.223	½	61%	72"	x	60" or 120"							
4.0 lb.	1.395 x 5.0	1.02 x 3.25	.30	.223	⅝	54%	60"	x	60" or 120"							
5.0 lb.	1.143 x 5.0	.72 x 2.88	.31	.223	⅝	48%	48"	x	60" or 120"							
7.0 lb.	1.333 x 5.0	.70 x 2.75	.40	.284	¾	40%	48"	x	50" or 100"							
4.27 lb.	1.412 x 4.0	1.0 x 2.88	.30	.243	⅝	58%	48" or 72"	x	96"							
ALUMINUM																
2.0 lb.	1.25 x 5.0	.73 x 2.88	.356	.250	⅝	43%	60 x 60 or 120									
Note: Special sizes on request. Specify sizes by giving diamonds SWD (Shortway of diamond) by LWD (Long way of diamond) respectively.																
LOAD TEST DATA																
TABLE OF DEFLECTIONS IN INCHES (SEE TABLE PAGE 3 FOR 4.27 lb. & 2.0 lb. ALUMINUM GRATE-X LOAD TEST DATA)																
CONCENTRATED LOAD AT CENTER LINE—POUNDS Per 12" WIDTHS (1)	25" CLEAR SPAN				30" CLEAR SPAN				35" CLEAR SPAN				40" CLEAR SPAN			
	TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING			
	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.
50	.060	.040	.037	.011	.086	.061	.048	.031	.147	.088	.068	.051		.119	.089	.062
100	.114	.082	.070	.035	.169	.120	.093	.062		.194	.138	.089		.241	.179	.111
150		.119	.102	.062		.177	.140	.093			.204	.123			.260	.159
200			.134	.079			.181	.117				.155				.205
(1) <b>LOADING CONDITION</b> —Concentrated load in lbs. per 12" of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6" on centers.										Based on Tests made by Armour Research Foundation						

# GRATE-X

**LOAD TEST DATA\***  
TABLE OF DEFLECTIONS IN INCHES

CONCENTRATED LOAD AT CENTER LINE—POUNDS PER 12" WIDTHS (2)	4.27 LB. GRATE-X CLEAR SPAN				2.0 LB. ALUMINUM GRATE-X	
	23"	29"	35"	41"	20" SPAN	25" SPAN
50	.024	.043	.083	.123	.076	.118
100	.050	.095	.156	.232	.153	.237
150	.080	.153	.223		.229	.355
900	.111	.209			.306	

(2) **LOADING CONDITION**—Concentrated load in lbs. per 12" of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6" centers.

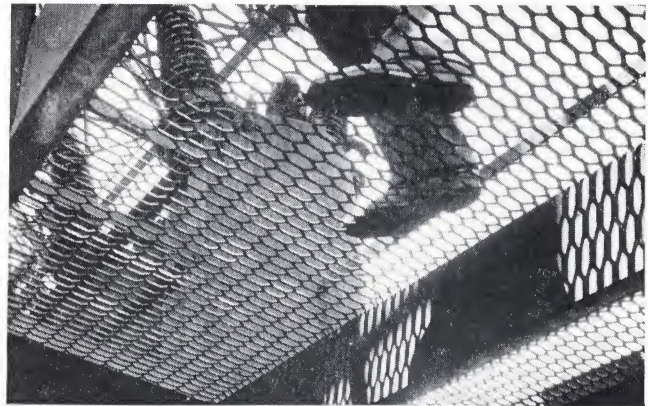
\*Load test data developed at USG Research Laboratory.

## SPECIFICATIONS

**SCOPE:** GRATE-X (U S G Expanded Metal Grating), shall be installed for all walkways and other areas where shown on drawings.

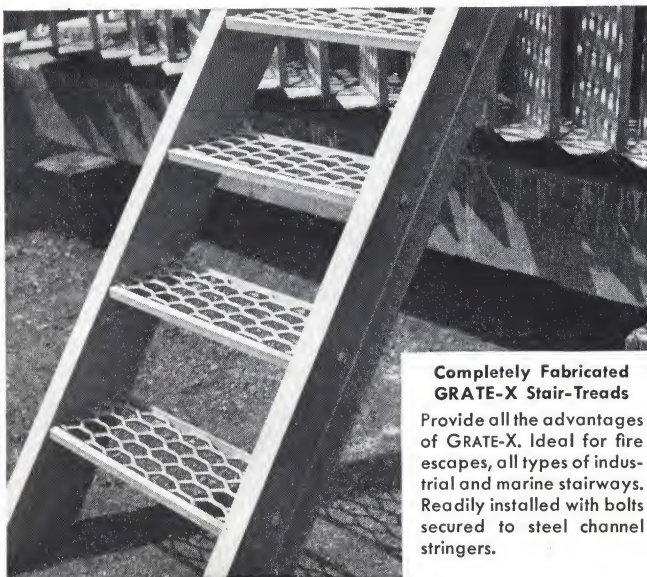
**MATERIAL:** GRATE-X shall weigh (specify weight per sq. ft.). The steel used in its manufacture shall comply with ASTM designation A-283-46T.

**ERECTION:** Units of GRATE-X shall be installed with straight edge of bond up. GRATE-X shall be so placed that the direction of the long way of the diamond parallels the direction of the span. Attachment to framing shall be by welding at 6" intervals. Edges parallel to long way of diamonds shall be butted and welded on every second bond. Individual pieces of GRATE-X shall be placed in such a manner that the diamonds of one piece are aligned with those of adjacent pieces.

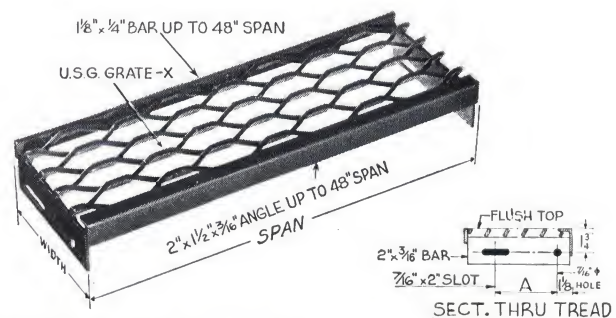


GRATE-X allows ready passage of air and light

## USG GRATE-X STAIR TREADS



**Completely Fabricated  
GRATE-X Stair-Treads**  
Provide all the advantages of GRATE-X. Ideal for fire escapes, all types of industrial and marine stairways. Readily installed with bolts secured to steel channel stringers.



### WIDTHS AVAILABLE

NO. 4A TREAD (4 LB. GRATE-X)	NO. 5A TREAD (5 LB. GRATE-X)	DIMENSION "A" FOR BOTH 4A & 5A
5 $\frac{3}{4}$ "	6 $\frac{1}{4}$ "	2 $\frac{1}{2}$ "
7 $\frac{1}{8}$ "	7 $\frac{3}{8}$ "	2 $\frac{1}{2}$ "
8 $\frac{1}{2}$ "	8 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "
9 $\frac{7}{8}$ "	9 $\frac{3}{4}$ "	6"
11 $\frac{1}{4}$ "	10 $\frac{7}{8}$ "	7"

# EXPAND-X\* AND FLATTENED EXPAND-X

## DESCRIPTION

EXPAND-X and Flattened EXPAND-X are open mesh Expanded Metal units made from sheets of steel which have been slit and expanded in a single cold-drawn operation. See data below for sizes.

## FUNCTION AND UTILITY

*Many uses.* Particularly suitable for partitions, ventilator grills, window guards, shelving, radiator enclosures, bins, racks, etc.

*Open mesh.* The large percentage of open area permits passage of air and light.

*Strong and rigid.* There are no rivets or welded joints except where units are joined. Strands of expanded metal are set at a sharp angle, improving strength and rigidity. Various weights are available to meet varying conditions.

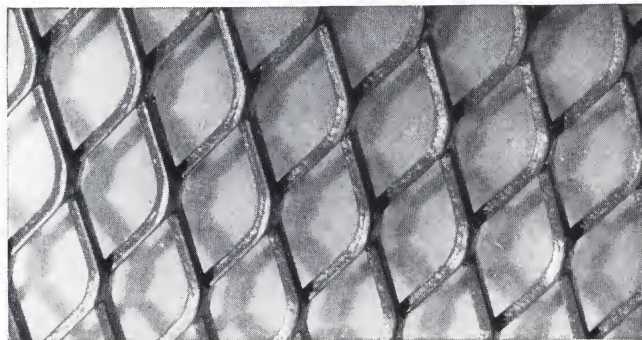
*Smooth surface.* The surface of Flattened EXPAND-X permits the use of an expanded metal product for shelving on which objects can more easily stand without tipping and slide without catching.

*Workable.* These products can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared.

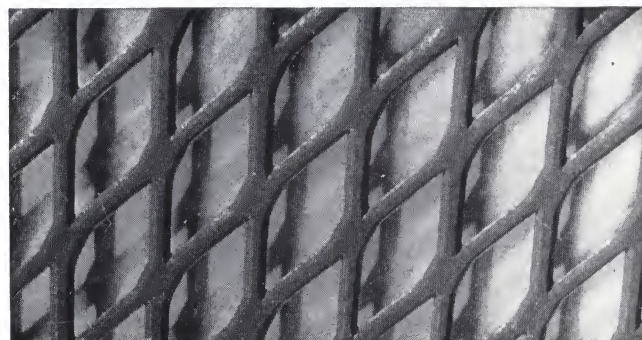
*Neat appearance.* Pattern is well formed and regularly spaced.

*Accessories.* Edgings, framings and various other accessories are available.

*Metals.* Open hearth steel, stainless steel and aluminum



EXPAND-X



Flattened EXPAND-X

are stocked. Copper, brass, etc., can be furnished made to order.

*Design service.* United States Gypsum Industrial Sales Division is equipped to assist in working out specific problems and to recommend attachment devices and methods.

GUIDE TO THE SELECTION OF USG EXPANDED METALS														(All dimensions are approximate)				
SUGGESTED APPLICATIONS					Style Number			Weight per sq. ft. (lbs.)	SIZE OF DIAMOND INCHES Cen. to Cen. of Bonds		EXPAND-X		Flattened EXPAND-X			Made from U. S. gauge No.		
EXPAND-X				Flattened EXPAND-X							Ap- prox. % open area	Sheet sizes		Ap- prox. % open area	Sheet sizes			
Machine guards	Win- dow guards	Partitions	Grat- ings	Shop bas- kets					Tool cribs	Filters and air condition- ing		Trays racks and shelv- ing	Width		Length		Width short way of diamond	Length long way of diamond
							•	¼" #18	1.17	.26	1.03			37	4'	8'	18	
						•	•	½" #40	.40	.497	1.195	83	4'	8'	77	4'	8'	18
•							•	½" #18	.70	.507	1.195	65	4' & 6'	8'	60	3' & 4'	8'	18
•				•			•	½" #16	.87	.507	1.195	65	4' & 6'	8'	63	3' & 4'	8'	16
				•		•	•	¾" #16	.54	.880	2.00	76	4' & 6' 6"	8'	76	3' & 4'	8'	16
•	•						•	¾" #13	.80	.880	2.00	76	4' & 6'	8'	75	3' & 4'	8'	13
	•	•		•			•	¾" # 9	1.80	.857	2.00	68	4' & 6'	8'	65	3' & 4'	8'	10
						•	•	1½" #16	.40	1.35	3.125	85	4'	8'	86	3' & 4'	8'	16
		•					•	1½" #13	.60	1.35	3.125	85	4' & 6'	8'	81	3' & 4'	8'	13
	•	•						1½" # 9	1.19	1.33	3.125	76	4' & 6'	8'	76	3' & 4'	8'	10

**TECHNICAL INFORMATION**

# BUILDING STEEL

## **PRODUCTS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

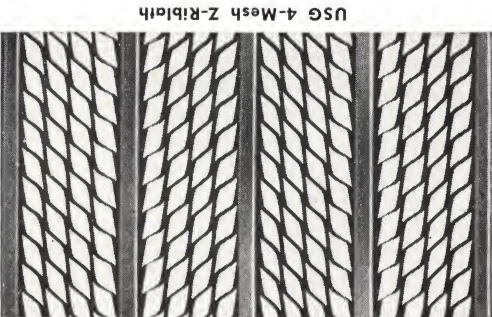
1956

**USG COLOR-RITE 4-MESH Z-RIBLATH**

A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plasterings. An excellent nail-on lath, or for tie-on work on flat ceilings. Size: 27" x 96".  
Weights: 2.75 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per sq. yd.

**Limitations of Use**

Use Diamond Mesh lath for contour plastering.



USG 4-Mesh Z-Riblath

**USG COLOR-RITE 3/8" RIBLATH**

A herringbone pattern mesh with 3/8" V-shaped ribs running lengthwise of the sheet at 4 1/2" intervals, with inverted intermediate 3/16" ribs. The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16" o.c. and not more than 24" o.c. and for 2" solid studless metal lath and plaster partitions. Used as a centering for concrete floor and roof slabs. See Technical Data page 15.

Size: 27" x 96".

Weights: 3.4 lbs. (End Painted Red) and 4.0 lbs. (End Painted Blue) per square yard.

**Limitations of Use**

Its extreme rigidity makes 3/8" Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to 3/8" rib, minimum ground thickness must be 1".

**USG 3/4" RIBLATH**

A herringbone pattern mesh with 3/4" deep V-shaped ribs lengthwise of the lath at 6" intervals. A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs. (See Data on page 15.)  
Sizes: 2' x 8', 2' x 10' and 2' x 12'.  
Weights: .60 lb. and .75 lb. per square foot.

**Limitations of Use**

Not recommended as a plastering lath.

**USG EXPANDED METAL STUCCOMESH**

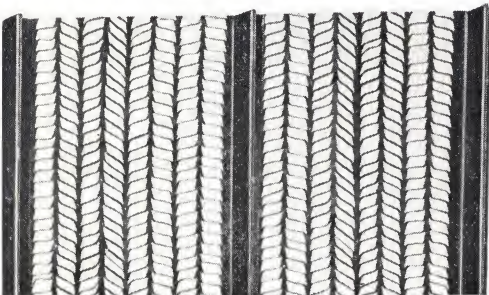
A 1 3/8" x 3 1/8" diamond pattern mesh made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

**Limitations of Use**

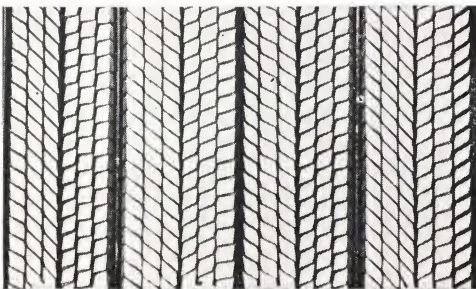
Should not be applied without using 1 1/2" galvanized furring nails. When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1 1/8" into studs.



USG Expanded Metal STUCCOMESH



USG 3/4" Riblath



USG 3/8" Riblath

## USG COLOR-RITE METAL LATH TYPES (Cont'd)

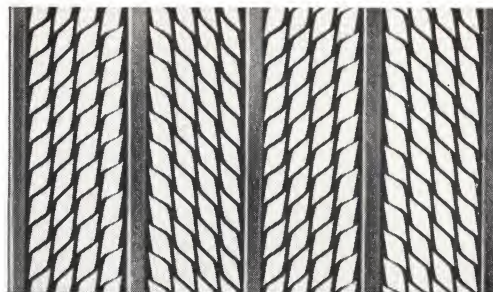
### USG COLOR-RITE 4-MESH Z-RIBLATH

A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plasterings. An excellent nail-on lath, or for tie-on work on flat ceilings. Size: 27" x 96".

Weights: 2.75 lbs. (*End Painted White*) and 3.4 lbs. (*End Painted Red*) per sq. yd.

#### Limitations of Use

Use Diamond Mesh lath for contour plastering.



USG 4-Mesh Z-Riblath

### USG COLOR-RITE 3/8" RIBLATH

A herringbone pattern mesh with 3/8" V-shaped ribs running lengthwise of the sheet at 4 1/2" intervals, with inverted intermediate 3/16" ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16" o.c. and not more than 24" o.c. and for 2" solid studless metal lath and plaster partitions. Used as a centering for concrete floor and roof slabs. See Technical Data page 15.

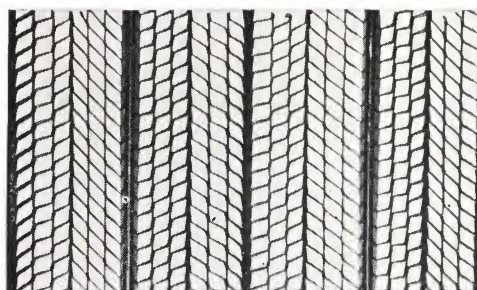
Size: 27" x 96".

Weights: 3.4 lbs. (*End Painted Red*) and 4.0 lbs. (*End Painted Blue*) per square yard.

#### Limitations of Use

Its extreme rigidity makes 3/8" Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to 3/8" rib, minimum ground thickness must be 1".



USG 3/8" Riblath

### USG 3/4" RIBLATH

A herringbone pattern mesh with 3/4" deep V-shaped ribs lengthwise of the lath at 6" intervals.

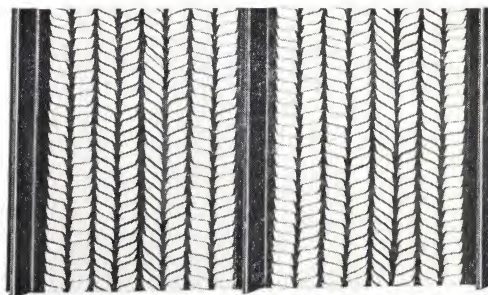
A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs. (See Data on page 15.)

Sizes: 2' x 8', 2' x 10' and 2' x 12'.

Weights: .60 lb. and .75 lb. per square foot.

#### Limitations of Use

Not recommended as a plastering lath.



USG 3/4" Riblath

### USG EXPANDED METAL STUCCOMESH

A 1 3/8" x 3 1/8" diamond pattern mesh made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

#### Limitations of Use

Should not be applied without using 1 1/2" galvanized furring nails.

When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1 1/8" into studs.



USG Expanded Metal STUCCOMESH

## USG LATHING ACCESSORIES

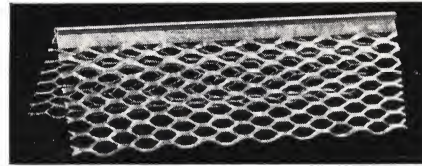
### USG CORNER BEADS

USG corner beads should be used on all external plaster angles to provide: (1) plaster protection, (2) true and straight lines at angles and (3) grounds for plastering.

Lengths: 8', 9', 10' and 12'. Gauge of Steel: 26 gauge galvanized.

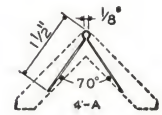
#### 1-A EXPANDED CORNER BEAD

Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.



#### 4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.



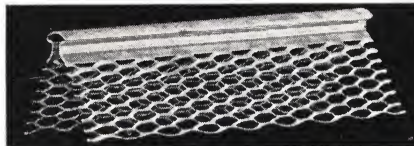
#### 5-A BULL NOSE CORNER BEAD

A 3/4" radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.



#### 10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with 2 1/2" wide expanded flanges. Especially suitable on irregular corners.

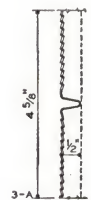
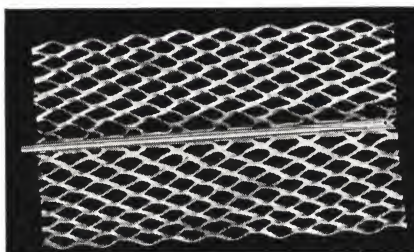


### USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement or terrazzo base. Lengths: 10' 0". Gauge of steel: 26-gauge galvanized steel.

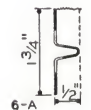
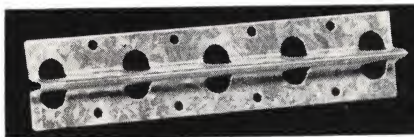
#### 3-A EXPANDED BASE SCREED

A flush type 1/2" ground (job shimmed for 3/4" grounds) with wide flexible expanded flanges for added reinforcement or for attachment to uneven surfaces. Used as a dividing point between plastered surfaces and cement in terrazzo.



#### 6-A PLAIN BASE SCREED

A flush type 1/2" ground (job shimmed for 3/4" grounds), used at the juncture of differing finishes; as between plaster and terrazzo surfaces.



#### 7-A CURVED POINT BASE SCREED

Use where base or wainscot projects beyond plastered surface. For 1/2" plaster ground (job shimmed for 3/4" grounds) and 1/2" projection.



#### 8-A PICTURE MOULD

A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds 1/2" (job shimmed for 3/4" grounds).



## USG LATHING ACCESSORIES (Cont'd)

### USG CASING BEADS

USG Casing Beads are used as a plaster stop and trim around window and door openings.

Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ )
138	Quarter Rd.	Short	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ , $\frac{7}{8}$ )
60	Semi-Square	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ )
		Short	22	( $\frac{1}{2}$ ", $\frac{3}{4}$ , $\frac{7}{8}$ )
66	Square	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ )
		Short	22	( $\frac{1}{2}$ ", $\frac{3}{4}$ , $\frac{7}{8}$ )

All casings are furnished in 7', 8' and 10' lengths of galvanized steel for use with metal lath, ROCKLATH\* or masonry construction. *Caution*—In order to insure proper grounds for plastering,  $\frac{3}{4}$ " casing beads are recommended for use in conjunction with metal lath, clay tile or brick;  $\frac{7}{8}$ " casing beads are recommended when the flange is applied under ROCKLATH plaster base.

$\frac{1}{2}$ " casing beads are recommended over PYROBAR\* and when flange is applied over ROCKLATH.

### USG 2" PARTITION TERMINAL

For use as a vertical partition terminal for 2" solid metal lath or ROCKLATH partitions, or as a ceiling runner where 2" partitions join an unplastered surface. Cap is formed of 18 gauge steel welded to a 24 gauge punched runner. Standard length 8'2" and prime coated.

### USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.

Lengths: 16' or 20'

Weights:  $\frac{3}{4}$ "—300 lbs. per M Lin. Ft.  
1 $\frac{1}{2}$ "—475 lbs. per M Lin. Ft.

### USG CEILING RUNNERS

**L-Type**—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

**Z-Type**—A specially designed steel angle for fastening to the ceiling in order to provide positive anchorage and alignment of  $\frac{3}{4}$ " channels in either solid partition construction or exterior wall furring.

### USG METAL BASE

A flush, clip-on metal base system consisting of a 2 $\frac{1}{2}$ " high face plate formed from 18-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the feature mounting snap-on application to the double base clip used in "2" solid plaster partition or to the single base clip and stud base clip used with hollow partitions or furred walls.

The face plates are easily notched and bent to form inside and outside corners, and are butted and internally spliced for continuous runs uninterrupted from one type of wall construction to another.

\*Trademarks Reg. U. S. Pat. Off.

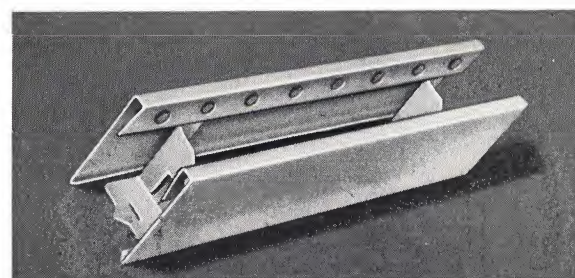
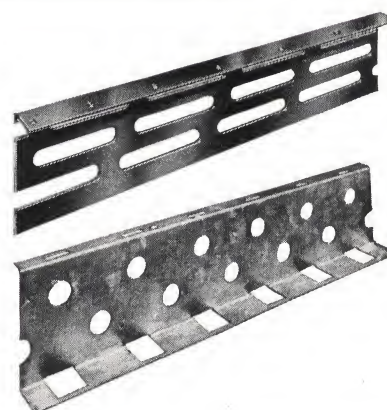
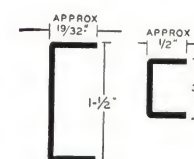
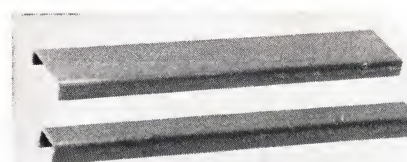
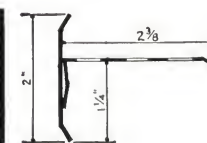
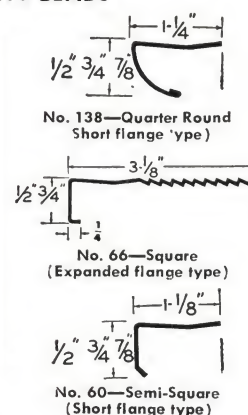
### METAL DOOR AND WINDOW CASING BEADS



No. 4—Expanded flange



No. 66—Short flange

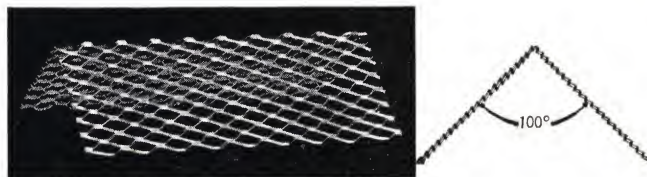


## USG LATHING ACCESSORIES (Cont'd)

### USG SELV-EDGE CORNERITE AND STRIPLATH

**Cornerite** is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle, length 96". Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, BRIDJOINT\* lathing system. If used, it is secured to the lath, not the supports.)

**Striplath** is a strip of 2.5 lb. Diamond Mesh lath, copper alloy, painted, 96" long—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.



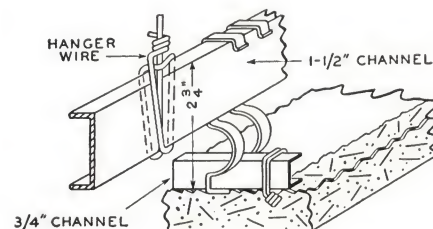
### USG METAL LATH RESILIENT PLASTERING SYSTEM

Specially formed steel clips to provide a non-rigid, or floating attachment of metal lath or channels to the structural frame; affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss. (See Data Table on page 9.)

#### Resilient Clip No. 100

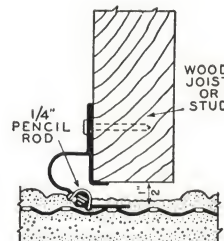
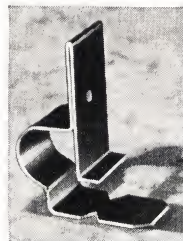
For resiliently attaching 3/4" cold rolled furring channels to 1 1/2" cold rolled runner channels in suspended ceiling construction.



#### Resilient Clip No. 200

For wood studs or joists. Clips spaced not over 12" o.c. for ceiling construction or 16" o.c. for sidewalls.

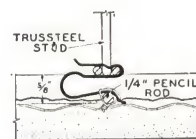
Attached by nailing with 13-gauge, 1 1/8" lathing nails. Metal lath is floated 1/2 in. free of the framing members by wire tying to a 1/4" pencil rod, nested and tied to the inside of the tongue of the resilient clip.



#### Resilient Clip No. 400

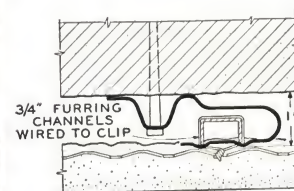
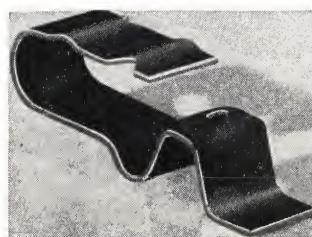
For TRUSSTEEL\* Studs. Snapped in place, 16" o.c., over the outer flanges of the TRUSSTEEL studs.

Metal lath is floated 1/2 in. free of the steel studs by wire tying to a 1/4" pencil rod nested and tied to the outside of the protruding tongue of the resilient clip.



#### Resilient Clip No. 500

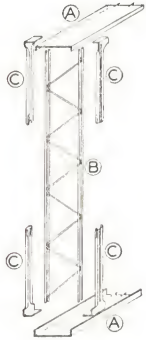
For masonry walls. Nailed in place over PYROBAR, or light weight concrete units, using 2" staples or 10d cut nails driven into the mortar joints or solid sections of the units. Attached similarly to clay tile or brick by driving 10d cut nail into the mortar joint. Metal lath is resiliently furred out 7/8" from the face of masonry by wire tying to 3/4" cold rolled channels wire tied inside the protruding tongue of the resilient clip.



Spacing of Furring Channels—	12"	16"	19"	24"
Spacing of No. 500 Clips—	24"	18"	15"	12"

\* Trademark Reg. U. S. Pat. Off.

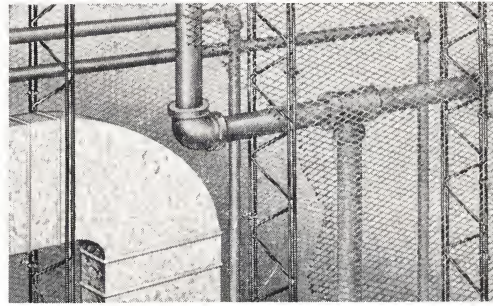
# USG TRUSSTEEL\* STUDS



## DESCRIPTION

This is a truss design stud for the erection of hollow non-load bearing fire-proof partitions. Outer chords and diagonal struts are constructed of round rods. As shown in the sketch, the component parts are (A) 22 gauge top and bottom runner tracks, (B) double 7 gauge rods welded to cross web at all contact points, (C) attachment shoes for connecting the studs to the runners.

Sizes—Consult technical data below.



## FUNCTION AND UTILITY

**Flexibility**—The stud construction by its open web design allows encasement of pipes, conduits, heat controls, oxygen tubes, and small ducts, horizontally and vertically without weakening the partition structurally by chasing. Diagonal struts are easily cut to accommodate larger pipes or ducts.

**Light Weight**—The finish partition weighs 10 to 17 lbs. per sq. ft., depending on the type of lath and plaster used.

**Fireproofing**—Fire tests conducted at nationally recognized laboratories give fire ratings of 1 to 2 hours depending on type of lath and plaster used. (See technical data below)

**Strength**—This partition has more than adequate strength, comparing favorably with other non-load bearing partitions used in modern building construction and is accepted nation wide by building code authorities.

**Economy**—Material costs are low, job erection is fast and provides substantial installation economy for mechanical trades. (Partition assembly in materials and trade practices parallels standard wood stud construction but with incombustible materials.)

**Adaptable**—Provided in four stud widths, available for varying ceiling heights and for use with Resilient Clips where additional Sound Transmission Loss is required. Plaster base may be either metal lath or ROCKLATH. (See AIA File No. 20-B-2 for ROCKLATH details and door buck attachments.)

## LIMITATIONS

USG TRUSSTEEL Studs are designed for non-load bearing partitions only.

Stud spacing is determined by the type of plaster base selected. Partition height should not exceed maximum heights shown in Technical Data.

## TRUSSTEEL STUDS TECHNICAL DATA

(All tests made by nationally recognized laboratories)

Stud Width	Finished Wall Thickness Normal Grounds		Maximum Partition Height	FIRE RATINGS AND SOUND TESTS				
	DiamondMesh 1/8" Riblath	3/8" Riblath ROCKLATH		Partition Construction		Plaster Thickness	Fire Rating	Average Sound Transmission and Loss in Decibels
				Lath	Plaster			
2 1/2"	4"	4 1/2"	14 Ft.	Metal Lath	Gypsum—Sand 1:2, 1:3	3/4"	45 Min.	40.5 (1)
3 1/4"	4 3/4"	5 1/4"	16 Ft.		Gypsum—Sand 1:2, 1:2	3/4"	1 Hour	
4"	5 1/2"	6"	18 Ft.		Gypsum—Wood Fiber	7/8"	2 Hour	
6"	7 1/2"	8"	20 Ft.		Gypsum—Perlite 100:2, 100:3	1"	2 Hour	
Stud Lengths: 7' 0" to 20' 0" in increments of 3". Runner Tracks: 2 1/2", 3 1/4", 4" and 6" widths by 8' 2" long.			Perforated ROCKLATH and TRUSS-LOCK Clips		Gypsum—Sand 1-2, 1:2 Gypsum—Perlite 100:2 1/2	1/2" 1/2"	1 Hour 1 Hour	48 44

## RECOMMENDED STUD SPACING

Type of Lath	TRUSSTEEL Stud Spacing
2.5 lb. Diamond Mesh Lath	12 Inches
3.4 lb. Diamond Mesh Lath	16 Inches
2.75 lb. 1/8" Riblath	16 Inches
3/8" Plain or Perforated ROCKLATH	16 Inches
3.4 lb. 1/8" Riblath	19 Inches
3.4 lb. 3/8" Riblath	24 Inches
4.0 lb. 3/8" Riblath	24 Inches

## NOTES:—

(1) Average decibel transmission loss 54.7 when furred both sides with USG No. 400 Resilient Clips and Pencil Rods supporting metal lath and plaster.

## USG METAL LATH TECHNICAL DATA

TYPES AND WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS								
Type of Lath	Weight	Type of Steel	Size Sheets	Maximum Allowable Spacings				
	Per Square Yard			Vertical Supports			Horizontal Supports	
				Wood	Metal		Wood or Concrete	Metal
Solid Partitions	Others (5)							
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27"x96"	16"	16"	12"	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	13½"
Diamond Mesh	3.4 lb.	Galvanized (2)	27"x96"	16"	16"	16"	16"	13½"
⅛" Z-Rib	2.75 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	12"
⅛" Z-Rib	3.4 lb.	Copper Alloy	27"x96"	19"	24"	19"	19"	19"
⅜" Rib	3.4 lb.	Copper Alloy	24"x96"	24"	24"	24"	24"	24"
⅜" Rib	4.0 lb.	Copper Alloy	24"x96"	24"	24"	24"	24"	24"
STUCCOMESH (3)	1.8 lb.	Copper Alloy	48"x99"	16" (3)				
STUCCOMESH	3.6 lb.	Copper Alloy	48"x99"	16" (3)				
¾" Riblath	Per Sq. Ft.			See table on page 15 for ¾" Riblath.				
	0.60 lb.	Copper Alloy	2'x8'					
	0.75 lb.	Copper Alloy	10'&12"					

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper. (2) Galvanized lath is cut from galvanized sheets.

(3) STUCCOMESH generally applied over exterior sheathing. (4) Not recommended, except for fireproofing

(5) Including vertical furring. of steel shapes.

### SIZE AND SPACING OF HANGERS FOR SUSPENDED CEILINGS

Maximum Ceiling Area Supported Per Hangers	Maximum Center to Center Spacing of Hangers	Minimum Size of W&M Gage Galvanized Wire	Alternate Types and Sizes of Hangers (1)
Up to 12½ Sq. Ft.	3 x 4 Ft.	No. 9	⅜" or ¼" Round Mild Steel Rods or 1"x⅜" Flat Mild Steel Bars
Up to 16 Sq. Ft.	4 x 4 Ft.	No. 8	

(1) Galvanized rods and rust inhibitive painted or galvanized straps recommended where severe moisture conditions may occur.

### SIZE AND SPACING OF MAIN RUNNERS FOR SUSPENDED CEILINGS

Center to Center Spacing of Runners	Size	Weight Per 1000 Feet	Maximum Spacing of Hangers
Up to 3 Feet	1½" Channel	475 lbs.	4'-0"
3'-6"	1½" Channel	475 lbs.	3'-6"
4'-0"	1½" Channel	475 lbs.	3'-0"

### SIZE AND SPACING OF FURRING MEMBERS

Center to Center Spacing of Supports	Size	Weight Per 1000 Feet	Maximum Spacing
3'-0"	¾" Channel	300 lbs.	24"
3'-6"	¾" Channel	300 lbs.	19"
4'-0"	¾" Channel	300 lbs.	16"

## USG METAL LATH TECHNICAL DATA (Cont'd)

### FIRE TEST DATA

#### Panel Type

(All tests made by nationally recognized laboratories)

Construction	Type Base	Plaster and Aggregate	Thickness	Rating
PARTITIONS				
Wood Frame	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	45 Minutes
		Gypsum-Sand, 1:2, 1:2	3/4"	1 Hour
		Gypsum-Sand, 1:2, 1:3	7/8"	1 Hour
		Gypsum Wood Fiber	3/4"	1 1/2 Hour
		Gypsum-Vermiculite 100:2 1/2, 100:3 1/2	3/4"	1 Hour
Solid	Expanded Metal Lath	Gypsum Perlite 100:2 1/2, 100:2 1/2	1 1/2"	1 Hour
		Gypsum-Sand, 1:2, 1:2	2"	1 Hour
		Gypsum-Perlite 100:2, 100:3	2 1/2"	2 Hour
TRUSSTEEL Studs	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	45 Minutes
		Gypsum-Sand, 1:2, 1:2	3/4"	1 Hour
		Gypsum-Sand, 1:2, 1:3	7/8"	1 Hour
		Gypsum Wood Fiber	7/8"	2 Hour
		Gypsum Perlite 100:2, 100:3	1"	2 Hour
CEILINGS				
Wood Frame	Expanded Metal Lath (A)	Gypsum Sand, 1:2, 1:3	3/4"	1 Hour
Steel Joists (B)	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	2 Hour
		Gypsum-Vermiculite, 100:2, 100:3	3/4"	3 Hour
		Gypsum Wood Fiber	1"	3 Hour
		Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
Cellular Steel Floor (C)	Expanded Metal Lath	Gypsum Wood Fiber	1"	4 Hour
		Gypsum-Perlite, 100:2, 100:3	1"	4 Hour
Cellular Steel Floor (D)	Expanded Metal Lath	Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
Suspended Channel (E)		Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
COLUMNS				
Steel Section	Expanded Metal Lath (F)	Gypsum-Sand, 1:2, 1:3	3/4"	1 Hour
		Gypsum Perlite, 100:2, 100:3	1"	2 Hour
		Gypsum-Perlite 100:2, 100:3	1 3/8"	3 Hour
		Gypsum-Perlite 100:2, 100:3	1 3/4"	4 Hour

(A) Lath applied with 1½" 11 gauge, 7/16" head barbed roofing nails, 6" o.c.

(B) 2½" reinforced concrete slab on Riblath or 2" precast gypsum tile above.

(C) Ceiling suspended 9" or more below floor slab.

(D) Ceiling suspended 3" or more below floor slab.

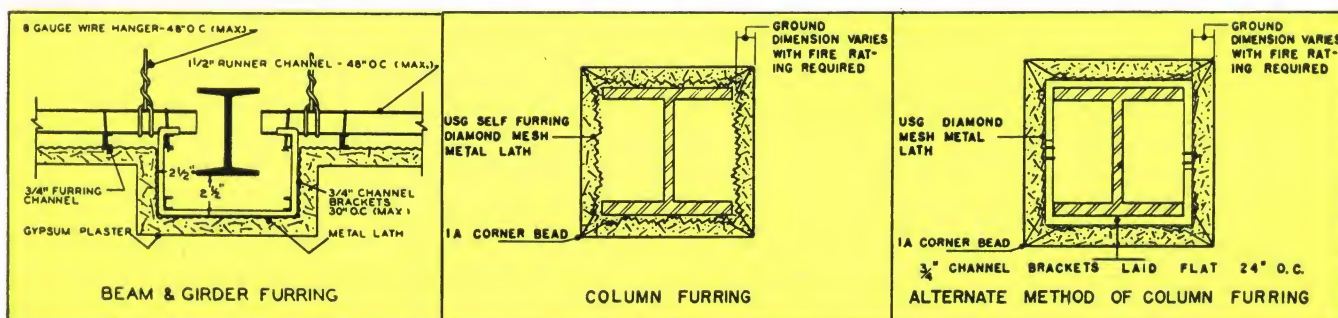
(E) Incombustible construction above.

(F) Self furring lath wrapped tight to column, or diamond mesh on channel framing.

### SOUND TRANSMISSION LOSS—PARTITIONS

2 x 4 wood studs; metal lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides	38.7 decibels
2" x 4" wood studs; USG No. 200 Resilient Clips; Pencil Rods; Metal Lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	52.0 decibels
2" solid metal lath and gypsum plaster smooth white coat on both sides.	39.4 decibels
¾" TRUSSTEEL Studs; USG No. 400 Resilient Clips; Pencil Rods; Metal Lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	54.7 decibels
¾" TRUSSTEEL Studs; metal lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	40.5 decibels

### BEAM AND COLUMN FURRING DETAILS



NOTE: FOR FIRE RATINGS, TYPE OF AGGREGATE, PROPORTIONS AND THICKNESS OF PLASTER SEE FIRE TEST DATA ABOVE

# USG METAL LATH AND LATHING SPECIFICATIONS

## NOTES TO ARCHITECT:

Paragraphs I, II, etc., are recommended as basic requirements for all metal lathing specifications. Paragraphs S-1, S-2, etc., apply to the erection of lath for various constructions and only those applicable to the job should be included.

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel framing is used, it is recommended that partitions be located so that at least a 1" offset in plaster face is provided at juncture of partitions with columns and/or beams, or that either of the following procedures be employed:

1. Furring off the face of such members so that there is at least 1" between back of metal lath and such faces.
2. By scatter nailing, 12" o.c., No. 30 asphalt felt and the metal lath across the faces of such structural members.

## I. SCOPE

Unless otherwise indicated, all lathing and furring shall be of metal, as herein described. (Or enumerate the areas.) Partitions shall be accurately located as shown on plans.

## II. GENERAL CONDITIONS

In cold weather, buildings shall be glazed and heated before lathing.

## III. MATERIALS

Unless specifically noted otherwise, all materials herein listed shall be protected by a coat of rust inhibitive paint after fabrication, bundled or packaged with positive identification.

**A. Metal Lath**—shall be USG COLOR-RITE metal lath, manufactured by the United States Gypsum Company, made from copper alloy steel sheets. Lath shall be colored to identify weight (red for 3.4, white for 2.5 diamond mesh and 2.75 flat Rib Lath; blue for 4.0 Rib Lath) and shall be provided in the following types and sizes:

- (2.5 lbs.) (3.4 lbs.) USG COLOR-RITE Diamond Mesh Lath—size: 27" x 96".
- (3.4 lbs.) USG COLOR-RITE Diamond Mesh Lath galvanized—size: 27" x 96".
- (2.5 lbs.) (3.4 lbs.) USG COLOR-RITE Diamond Mesh—self-furring lath—size: 27" x 96".
- (2.75 lbs.) (3.4 lbs.) USG COLOR-RITE  $\frac{1}{8}$ " Rib Lath (Flat Rib Lath)—size: 24" x 96".
- (2.75 lbs.) (3.4 lbs.) USG COLOR-RITE 4-mesh Z-Rib Lath—size: 27" x 96".

(3.4 lbs.) (4.0 lbs.) USG COLOR-RITE  $\frac{3}{8}$ " Rib Lath—size: 27" x 96".

(1.8 lbs.) (3.6 lbs.) USG Expanded Metal Stucco Mesh— $1\frac{3}{8}$ " x  $3\frac{1}{8}$ " mesh.

## B. Lathing Accessories

**1. Channels** shall be 16-gauge cold rolled steel channels, as manufactured by the United States Gypsum Company.

- (a)  $\frac{3}{4}$ ", weighing not less than 300 lbs. per 1,000 lineal feet.
- (b)  $1\frac{1}{2}$ ", weighing not less than 475 lbs. per 1,000 lineal feet.
- (c) Other

**2. Pencil Rods** for furring shall be not less than  $\frac{1}{4}$ " in diameter and of mild steel.

**3. Hangers** shall be 9-gauge, galvanized annealed steel wire.

**4. Tie Wire** shall be 16-gauge and 18-gauge galvanized annealed steel wire, as specified herein.

**5. Corner Bead**—Shall be USG, as follows:

- 1-A Expanded Corner Bead
- 4-A Flexible Corner Bead
- 5-A Bull Nose Corner Bead
- 10-A Expanded Bull Nose Corner Bead

**6. Corner Bead Clips**—Shall be USG No. 9-A Corner Bead Clips—galvanized steel.

**7. Base Screed**—Shall be USG

- 3-A Expanded Base Screed
- 6-A Plain Base Screed
- 7-A Curve Point Base Screed
- 8-A Picture Mould

**8. Casing Bead**—Shall be USG

- No. 4 Expanded Flange Quarter Round
- No. 138 Short Flange Quarter Round
- No. 60 Expanded Flange—Semi-Square
- No. 60 Short Flange—Semi-Square
- No. 66 Expanded Flange—Square
- No. 66 Short Flange—Square

**9. Cornerite**—Shall be USG Selv-edge Cornerite, (2" x 2") (3" x 3").

**10. Striplath**—Shall be USG Selv-edge Striplath, (4") (6").

## USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

**11. 2" Partition Terminal**—Shall be composed of a cap formed of 18-gauge steel, welded to 24-gauge punched runner, as manufactured by United States Gypsum Company.

**12. Metal Studs**—Shall be TRUSSTEEL studs, manufactured by United States Gypsum Company, formed with not less than 7-gauge wire. Stud sizes shall be as indicated on drawings or as follows: (2½"), (3¼"), (4"), (6").

**13. Ceiling Runner**—As manufactured by United States Gypsum Company shall be:

L Type

Z Type

**14. Metal Base**—Shall be 2½" high, face plate formed from 18-gauge steel, weighing not less than 600 lbs. per 1,000 lineal feet and as manufactured by the United States Gypsum Company complete with:

Splice plates

Single base clips for furred walls

Double base clips for 2" solid partitions

Stud base clips for hollow stud partitions

Masonry base clips for masonry walls

**15. Metal Lath Resilient Clips**—Shall be as manufactured by the United States Gypsum Company:

No. 100 for Suspended Ceilings

No. 200 for Wood Studs and Joists

No. 400 for TRUSSTEEL Studs

No. 500 for Masonry walls

**16. Wall Furring Brackets**—Shall be USG galvanized steel adjustable wall furring brackets.

### IV. GROUNDS

Unless otherwise specified, grounds shall be set to provide not less than ¾" thickness of plaster measured from the flat portion of the back plane of the metal lath exclusive of ribs and be securely wire tied or nailed into place. (Note: Greater thicknesses are required for certain fire ratings.)

### V. ERECTION OF METAL LATH

All metal lath shall be applied with the long dimension of the sheet across the supports. Rib lath shall be applied with the projections against the supports.

The ends of all lath shall be lapped not less than 1". If end laps are made between supports, they shall be adequately laced or tied with No. 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½". The sides of rib lath shall be lapped by nesting outside ribs. Side laps shall be secured to every support unless otherwise specified, and shall be wire-tied

between supports not to exceed 9" intervals. All metal lath except ⅝" riblath shall be started at one support away from the corner and be bent into the corner and carried on to the abutting wall. Where ⅝" rib lath is used, it shall be butted into the corners and cornerite shall be applied over the abutting lath and wired at 6" intervals along each edge in corners; cornerite shall be wire-tied along the edge only, not in the corner. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent course shall be staggered.

Metal lath shall be secured to supports with 18 gauge tie wire at intervals not exceeding 6". Ends of tie shall have three full twists, then bent up in the plane of the lath.

Corner Beads, Casing Beads, Base Screeds, Picture Molds, etc., shall be positioned by securely wiring to the metal lath at not more than 12" intervals. Attachment to masonry or other solid construction shall be by nailing at intervals of not more than 12". ½" concrete stub nails shall be used for attachment to concrete.

### VI. ERECTION OF GRILLAGES

**A.** Hangers shall be spaced not over (3'-0") (3'-6") (4'-0") in the direction of the main runners and not over (4'-0") (3'-6") (3'-0") in the direction at right angles to the main runners, and within 6" of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity.

All hangers shall be of such lengths to (wrap around or be securely attached to steel beams or joists) (provide suitable anchorage in concrete by attachment to reinforcing steel, or by being looped and embedded 2" in concrete) and to provide for full saddle tie to main runner at indicated height.

**B.** Main runners shall be placed not over (4'-0") (3'-6") (3'-0") on center, properly positioned relative to the indicated ceiling height, leveled and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6" of the walls to support the ends of the cross furring.

At main runner splices, the ends shall be overlapped not less than 12", with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

**C.** Cross furring channels shall be spaced (12") (13½") (16") (19") (24") and securely saddle tied with two strands of 16 gauge tie wire to (main runners) (steel joists).

Cross furring shall not be let into or come in contact with abutting masonry walls.

At splices of cross furrings, the ends shall be overlapped not less than 8", with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont.)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS

### S-1. Nailing to Wood Supports

Metal lath shall be secured to framing at intervals not to exceed 6" o.c. by one of the following methods:

1. Metal lath shall be attached to vertical framing members with:

(a) 4d common nails driven to  $\frac{3}{4}$ " penetration and bent over to engage at least three strands of diamond mesh lath or a rib of rib lath.

(b) 1" roofing nails,  $\frac{7}{16}$ " head, driven home and so as to engage at least two strands of diamond mesh or through the rib of rib lath.

(c) 1", 14-gauge wire staples, driven home without crushing the lath strands and engaging at least two strands of diamond mesh lath or through the rib of rib lath.

2. Metal lath shall be attached to horizontal framing members with:  $1\frac{1}{2}$ ", 11-gauge barb roofing nails with  $\frac{7}{16}$ " head, to engage at least two strands of diamond mesh or through the rib of rib lath.

### S-2. Nailing to Nailable Steel Supports

Metal lath shall be secured to framing at intervals not to exceed 6" o.c. with nails of size and type recommended by manufacturer of nailable steel supports.

### S-3. Metal Lath Secured to Steel Joists

Metal lath shall be secured to the lower flanges of steel joists with one loop of 16-gauge tie wire, or two loops of 18-gauge tie wire, at intervals not to exceed 6" o.c. Ends of tie wire shall be given at least three twists.

### S-4. Metal Lath Attached to Rib Concrete Construction.

Hangers for attaching metal lath directly to the underside of concrete joists form construction shall be provided with a loop or other deformation to positively enter the concrete or be secured to the reinforcing steel.

They shall be of not less than (2 strands of No. 14-gauge galvanized annealed wire when twisted as for tie wire) or (No. 10-gauge galvanized wire when struck over to support the lath). Hangers shall be spaced at not-to-exceed 5" intervals along bottom of the joist.

Where spacing of concrete ribs exceeds 24" center to center, there shall also be placed in the forms 12 gauge galvanized wire hangers midway between the concrete ribs, spaced not to exceed 36" on centers.  $\frac{3}{4}$ " furring channel shall be positioned parallel to the ribs and vertically as required by the indicated ceiling heights by saddle tying to these hangers. Metal lath shall be  $\frac{3}{8}$ " rib lath weighing not less than 3.4 lbs. sq. yd.,

securely attached to the underside of the concrete joist by twisting the No. 14-gauge wire hangers as for tie wire, or by clinching of other types of hangers, and by tying to the channels with No. 18-gauge galvanized annealed wire at intervals not exceeding 6" o.c. A tie wire shall be placed at side laps of sheets between supports. Where spacing of concrete joists does not exceed 24" center to center, the  $\frac{3}{8}$ " rib metal lath shall be securely attached to the undersides of the concrete joists by twisting the No. 14-gauge wire hangers as for tie wires or by clinching of other types of hangers.

### S-5. Furred Ceiling on Wood Joists

16d common nails spaced to conform to spacing of furring members, shall be driven horizontally through each joist at least 2" above the lower edge; the point and head to project equally from each side of joist.

Channel furring shall be attached at right angles to joist, shall not exceed a spacing of (12") (13½") (16") (19") (24"), flush against the bottom edges by securely wire-tying the furring to each nail with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength. Metal lath shall be attached to the steel furring with wire ties at intervals not to exceed 6".

### S-6. Furred Ceiling on Steel Joists

Furring members shall be  $\frac{3}{4}$ " cold rolled channels and shall not exceed a spacing of (12") (13½") (16") (19") (24") and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength.

### S-7. Metal Lath Vertical Furring

USG Adjustable Wall Furring Brackets shall be attached to the masonry walls not over 4" from columns or other abutting construction, and not over 36" on center vertically and horizontally, and as required above and below windows, using one 2" cut nail in top hole of bracket in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks, or using  $\frac{5}{8}$ " concrete stud nails or power-driven nails in monolithic concrete. In masonry construction, brackets can be embedded in mortar joints as masonry is laid. Furring channels shall be laid horizontally on the furring brackets with the legs down, and wire-tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

Vertical members shall be not less than  $\frac{3}{4}$ " cold rolled channels. They shall be spaced (12") (13½") (16") (19") (24"). They shall be securely saddle-tied to horizontal members with a double strand of 16-gauge wire at each crossing, and

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS (Cont.)

shall be securely anchored to the floor and ceiling construction. Optional—Vertical  $\frac{3}{4}$ " channels may be secured to horizontal  $\frac{3}{4}$ " channels placed 6" from the floor and/or top of vertical channels. These horizontal channels to be secured to the wall in the same manner as specified previously.

(Note: Where dampproofing has been damaged in installation of attachments, it shall be pointed up with the same material before proceeding with the installation of the furring.)

### S-8. Channel Studs, Metal Lath and Plaster SOLID PARTITION

Studs shall be not less than  $\frac{3}{4}$ " cold rolled channels spaced (16") (24"), securely anchored at floor by:

(Engaging tongue of the USG Double Metal Base Clip.)

(Bending ends of studs and nailing directly to concrete floors with concrete stub nails or nailing to wood runner fastened to floor.)

(Setting in holes of Z type ceiling runner nailed to wood runner or floor.)

(Wire tying to L type ceiling runner nailed to wood runner or floor.)

Studs shall be securely fastened to the soffit of the floor or roof above, or to the joists or to a suspended ceiling by:

(Inserting in Z type ceiling runner nailed or wire-tied to ceiling.)

(Wire tying to L type ceiling runner nailed or wire-tied to ceiling.)

(Punching studs through ceiling lath and wire-tying to furring channels.)

Top clearance shall be such that studs will not bow when erected.

Where 2-piece studs are necessary, they shall be spliced by lapping not less than 8", with flanges interlocked, and securely wire tying 1" from each end of splice.

Studs adjacent to openings shall be securely anchored to the frames or bucks or studs adjacent to bucks may be omitted if other means of anchoring lath is provided and bucks are temporarily braced before plastering. Where wood bucks are used, 8d nails shall be driven in pairs into both jambs of the wood buck at intervals of 2', beginning 9" above floor, and channel studs securely wire-tied to the nails.

A horizontal reinforcing ( $\frac{1}{8}$ " by  $1\frac{1}{4}$ " flat iron) ( $\frac{3}{8}$ " diameter rod) shall be saddle tied to the channels 8" above top of door to the channel side and extend continuously past the first studs at full spacings beyond the line of door frame or buck.

Metal lath shall be secured, one side only, to each channel stud by 18-gauge galvanized tie wire at 6" intervals.

### S-9. Studless Metal Lath and Plaster Solid Partitions

(USG Metal Base) (2" wide by  $1\frac{5}{8}$ " high routed wood floor runners) shall be securely attached to the floors by means of fasteners suitable to floor materials.

L-Type ceiling runners shall be located so that the metal lath will be in the center of the partitions and plumb. (Runners shall be fastened to concrete ceilings with stub nails or other approved means.) (Runners shall be fastened to metal lath ceilings with wire-ties at approximately 12" spacings.)

3.4 lb.  $\frac{3}{8}$ " rib lath shall be erected with the long dimension of the sheet vertical (attached to floor runners) (Set in groove of grouted metal base assembly) and securely anchored to ceiling runners with wire ties 8" o.c. A wire tie shall be placed where sheets nest approximately 9" o.c. (Metal lath shall be wire tied to inserts of steel door frames.) (Where wood bucks are used, metal lath shall be wire-tied to USG L-type runner nailed not over 8" o.c. to back of buck.)

Temporary bracing—Bracing shall be not less than  $\frac{3}{4}$ " C.R. channel placed horizontally near mid-height of partition, tied to metal lath at 24" o.c. and with  $1\frac{1}{2}$ " angle braces placed vertically not over 6'-0" on centers. Wedge vertical braces at top and bottom and tie to  $\frac{3}{4}$ " horizontal channel to hold lath in vertical position.

*(Note to Architect: Where metal door bucks are used, they shall be furnished with inserts to which the metal lath can be wire-tied.)*

### S-10. USG Metal Base

Metal base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with splice plates. Base shall be securely held in place by clipping to base clips at:

(16" o.c. (TRUSSTEEL) (Channel) Studs)

(24" o.c. studless solid plaster partitions)

(12 to 16" o.c. masonry walls)

Base clips shall be secured by nailing to floor or masonry walls and by wire tying to metal studs.

### S-11. Metal Lath Resilient System

USG Metal Lath Resilient System, where shown on plans or otherwise indicated in this specification, shall be:

(a) Suspended ceiling grillage.  $\frac{3}{4}$ " channels shall be supported on USG clip No. 100, spaced ( $13\frac{1}{2}$ ") (16") o.c. along the  $1\frac{1}{2}$ " carrying channels.

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS (Cont.)

(b) Wood stud and joist framing spaced not over 16" o.c. USG No. 200 clips shall be spaced 12" o.c. along joists and attached with 4d common nails. USG No. 200 clips shall be spaced not over 16" o.c. along the studs and attached with 4d common nails. ¼" pencil rods shall be wire-tied to inside of tongue on the clips and metal lath wire-tied to the pencil rods.

(c) TRUSSTEEL stud partitions. USG No. 400 clips shall be spaced not over 16" o.c. along stud and wire-tied with 18-gauge tie wire. A ¼" pencil rod shall be wire-tied to the notch on the outside flange of the clip.

(d) Masonry walls. USG No. 500 clips shall be spaced not over 18" o.c. vertically supporting ¾" furring channels not over 16" o.c. USG No. 500 clips shall be attached to (gypsum tile with 2" staples or 10d cut nails driven through hole in clip into solid section of tile) (brick or clay tile or masonry walls with 10d cut nails driven through hole in clip into the mortar joint). Channels shall be wired to the inside of the tongues of the clips with the webs of the channels away from the lath and metal lath wire-tied to the channels.

### S-12. TRUSSTEEL Stud Partitions

Unless otherwise specified, all interior non-load-bearing partitions shall be (2½") (3¼") (4") (6") TRUSSTEEL Stud partitions. TRUSSTEEL Stud runner tracks shall be aligned accurately according to partition layout and securely attached to floor and ceiling construction. Studs shall be erected vertically not to exceed (16" o.c.) (19" o.c.) (24" o.c.) (depending on type and weight of lath used) secured to floor and ceiling runner track with attachment shoes, wire-tied around studs with a double strand of 18-gauge tie wire. Framing shall provide studs located approximately 2" from abutting partitions or wall constructions, at all openings and 2" from each side of all internal angles. Securely wire-tie door buck anchors to the adjacent studs. Metal lath shall be wire-tied to the studs 6" o. c.

### S-13. Beam Fireproofing

For beams and girders, framework shall be formed to contour in size shown on drawings, of ¾" channels as follows:

(a) Where ¾" channels are used for longitudinal furring, brackets shall be not more than 3'-0" apart.

(b) Where ¼" pencil rods are used, brackets shall not exceed 19" apart.

(c) Where longitudinal furring is not used, brackets shall not exceed 13½" on centers for 3.4 lb. diamond mesh metal lath, provided that at least one row of longitudinal channel shall be installed to hold work in proper shape.

Brackets shall be saddle tied to structural members with not less than four strands of No. 16 gauge wire. For tying longitudinal members to brackets, wire shall be not less than 16 gauge galvanized wire, and, for tying metal lath to rods or channels, wire shall not be less than 18-gauge galvanized wire.

Brackets shall be formed in accordance with details furnished by the architect. Brackets shall be securely wired, bolted or clamped to walls, ceilings, or structural members, as the case may require. For fastening brackets to various bases adequately strong anchorage shall be provided.

Metal lath shall be applied to the longitudinal channels or rods or direct to brackets and made to conform with the outline of the finished beam or cornice. Side laps shall not occur at the corners, but lath shall be carried around to the next members or corner strips shall be used at all corners.

### S-14. Column Fireproofing

Lathing for fireproofing of columns shall be done by (applying self-furring diamond mesh lath formed to neatly fit the column and wire tied not over 6" o.c. at all laps) (installing ¾" channel brackets and studs properly spaced to provide design lines shown or to enclose pipes and ducts, as required. Attach diamond mesh metal lath wire tying it to channels with 18-gauge tie wire spaced not over 6" o.c.). No. 1-A corner beads shall be wired tied to the metal lath so as to provide plaster thickness specified or shown.

## METAL LATH CENTERING

**Description.** A rigid  $\frac{3}{8}$ " or  $\frac{3}{4}$ " Rib Lath used as a form and reinforcing for short span concrete slabs over concrete or steel joists.

As a form, the metal lath is fabricated with closely spaced stiffening ribs running lengthwise of the sheet and does not depend on being stretched taut to carry the load of wet concrete.

As a reinforcing, metal lath is unsurpassed by any other material. Centering Lath has a herringbone mesh which permits the concrete to flow through and grip the steel, forming hundreds of keys per sq. ft. thus providing

exceptional bond to the lath, at the bottom of the slab where tension stresses are greatest.

Metal lath for centering is a low cost material that is inexpensively and quickly tied or clipped to the supporting members. Because of its rigidity there is very little sag between joists, requiring a minimum of temporary supports and less concrete.

The spacing of supports, the thickness of slab and the safe loads required will determine the type of Lath to be used. Consult tables below.

LOADING TABLES FOR 3/8" RIBLATH						
Thickness of Slab Above Mesh	Wt. of Concrete (Lbs. Per Sq. Ft.)	Wt. of Lath (Lbs. Per Sq. Yd.)	SAFE SUPERIMPOSED LOADS IN LBS. PER SQ. FT. (Based on WL/8 and 16,000 lbs. Fibre Stress in Steel)			
			SPAN IN INCHES			
			12	16	19	24
2"	24	3.4	950	536	380	238
		4.0	1090	613	433	271
2½"	30	3.4	1200	675	479	300
		4.0	1360	766	544	340
3"	36	3.4	1450	815	578	362
		4.0	1650	930	625	412

LOADING TABLES FOR 3/4" RIBLATH									
Thickness of Slab Above Mesh	Wt. of Concrete (Lbs. Per Sq. Ft.)	Wt. of Slab† with ½" P. C. Plaster on Underside	Wt. of Lath (Lbs. Per Sq. Ft.)	Stress in Concrete (Lbs. Per Sq. In.)	Max. Span for Wet Concrete*	SAFE SUPERIMPOSED LOADS IN LBS. PER SQ. FT. (Based on WL/10 and 16,000 lbs. Fibre Stress in Steel)			
						SPAN IN FEET			
						3	4	5	6
2"	24	30	.60	600	3' 3"	325	170	98	59
			.75	690	3' 7"	438	233	138	87
2½"	30	36	.60	520	2' 11"	422	222	129	78
			.75	620	3' 3"		302	180	114
3"	36	42	.60	460	2" 8"	518	273	160	98
			.75	550	2' 11"		373	224	142
3½"	42	48	.60	420	2' 5"		325	190	117
			.75	490	2' 9"		442	267	170
4"	48	54	.60	390	2' 3"		378	222	138
			.75	460	2' 6"		514	310	198

## SPECIFICATIONS

Metal lath for concrete slabs over steel beams shall be USG [ $\frac{3}{8}$ " (3.4 lb.) (4.0 lb.)] [ $\frac{3}{4}$ " (.60 lb.) (.75 lb.)] Rib Lath as supplied by United States Gypsum Co.

Rib lath sheets shall be placed over and across the steel supports with the ribs upward. Edge ribs of adjacent sheets shall be nested and wire tied at supports and at least once between supports. End laps occurring over

supports shall be lapped not less than 1½" beyond center of support. When end laps occur between supports, lap shall be not less than 4" with ribs interlocking and wire tied in at least two places on each rib with at least 18 ga. tie wire.

Centering lath shall be attached to joists with special wire attachment clips or tie wire.

## USG ALUMINUM LOUVERS

### Description.

USG Louvers are made of rust-proof "Life Time" Aluminum in a complete range of types and sizes. The improved design provides greater weather protection, positive and maximum ventilation, and easy installation. Aluminum nails furnished with most models. 8 mesh non-rusting screen furnished unless 16 mesh is ordered.

### Where Used and Why.

USG Aluminum Louvers are a necessity in every insulated home. At least two per house are required. Attic ventilation is essential to overcome two major problems—condensation in winter, and attic heat in summer. Unexcavated areas also require ventilation to prevent condensation.

### Types and Uses.

**Rectangular Louvers** are designed to be self-casing or flush type for installation in vertical exterior attic walls.

**USG Multi-Pitch\* Louvers** are designed to fit any pitch from 5-12 to 12-12 by a unique adjustable feature which keeps the openings

equally spaced regardless of pitch, providing more free area than any other type of adjustable louver. For use with gable roofs.

**Pitched Roof Louver** for installation in hip roofs. Designed for maximum ventilation and storm protection. Embossed aluminum finish.

**Cu-Po-Vent\* Cupola Louver** is architecturally designed to serve both a decorative and functional use in today's modern house. Roof section is coated with a compound to give sound-deadening qualities. Three models—No. 3 for pitched roofs, and No. 7 for curb, or flat roof construction, and No. 5 for either flat or pitch roofs.

Sturdy cast aluminum weathervanes are available in four handsome models, No. 1—Rooster, No. 2 Boxer dog, No. 3 flying duck and No. 4 Country Doctor.

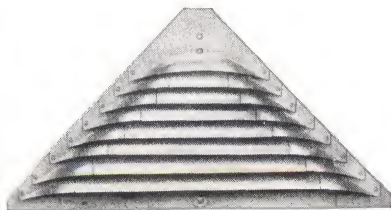
**Foundation Louvers.** Masonry type for ventilating crawl spaces. Sized to match concrete block.

**Exterior Air Vents** for use as cornice vents under eaves and for ventilation of unexcavated areas with frame construction.

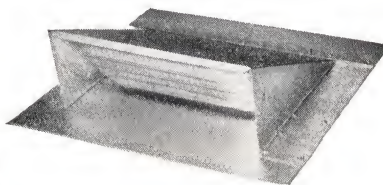
**Interior Air Vents** for installation in walls or doors where air flow is required. (No screen furnished)



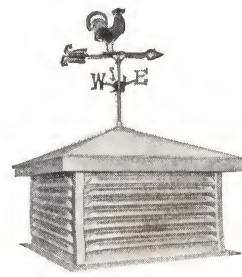
Rectangular Louvers



Multi-Pitch Louvers



Pitched Roof Louvers



Cu-Po-Vent Louvers

## TECHNICAL DATA

Type	Size Width & Height	Opening Size	Net Free Area
RECTANGULAR	8"x8"	8½"x8½"	29.6 sq. in.
	8"x12"	8½"x12½"	44.4 sq. in.
	8"x16"	8½"x16½"	60 sq. in.
	12"x12"	12½"x12½"	75 sq. in.
	12"x18"	12½"x18½"	112 sq. in.
	12"x24"	12½"x24½"	150 sq. in.
	14"x24"	14½"x24½"	172 sq. in.
	24"x30"	24¾"x30¾"	380 sq. in.
	30"x12"	30¾"x12¾"	170 sq. in.
	30"x18"	30¾"x18¾"	255 sq. in.
	30"x24"	30¾"x24¾"	340 sq. in.
	30"x28"	30¾"x28¾"	396 sq. in.
	30"x34"	30¾"x34¾"	481 sq. in.
	30"x42"	30¾"x42¾"	594 sq. in.
Pitched Roof	— — —	12¾"x 6¾"	37.5 sq. in.
Foundation (Masonry)	15½"x7½"	15½"x 7½"	45 sq. in.
Exterior Air Vents (Cornice, Eaves, Crawl Spaces, Wood Frame Construction)	16"x5½"	14½"x 4"	24 sq. in.
	16"x 9"	14½"x 7"	45 sq. in.

MULTI-PITCH ADJUSTABLE GABLE LOUVER		
No.	Pitch	Net Free Area
58	5-12	160 sq. in.
	8-12	120 sq. in.
58 Jr.	5-12	108 sq. in.
	8-12	81 sq. in.
712	7-12	144 sq. in.
	12-12	100 sq. in.
712 Jr.	7-12	82 sq. in.
	12-12	59 sq. in.

SECTIONAL TRIANGULAR LOUVERS		
Base Dimension	Pitch	Net Free Area
10'	3-12	344 sq. in.
10'	4-12	444 sq. in.
8'	5-12	408 sq. in.
8'	6-12	475 sq. in.

CU-PO-VENT—CUPOLA LOUVERS		
No.	Type	Net Free Area**
3	CU-PO-VENT	567 sq. in.
7	CU-PO-VENT	794 sq. in.
5	CU-PO-VENT	215 sq. in.

Type	Overall Size	Opening Size	Net Free Area
Interior Air Vents	11"x5½"	9½"x4"	16 sq. in.
	16"x5½"	14½"x4"	24 sq. in.
	16"x9"	14½"x7"	45 sq. in.

### WHAT SIZE LOUVER?

Provide ½ sq. in. free ventilation area for each 1 sq. ft. of attic area for best condensation control. Louvers should be installed to provide cross ventilation.

### FREE AREA

The ventilating areas shown are not gross, but net, as required by F.H.A. All restrictions have been allowed for.

\*T. M. of Home Comfort Manufacturing Co. Reg. U. S. Pat. Off.

TECHNICAL INFORMATION

# USG\* SHEATHING

## WITH THE ASPHALTED GYPSUM CORE



**UNITED STATES GYPSUM**  
The Greatest Name In Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG\* SHEATHING

## DESCRIPTION

USG Sheathing is a fireproof gypsum sheathing material. It is made in large unit sheets  $\frac{1}{2}$ "x 2'x 8' with a new type water-resistant "asphalted" gypsum core enclosed in a specially treated, water-repellent, heavy black paper. The long edges are V-tongued and grooved.

## FUNCTION AND UTILITY

**Fireproof**—The gypsum core is incombustible and will not transmit high temperatures until completely calcined—a slow process.

**Resistance to Weather and Moisture**—The gypsum in the core is thoroughly inter-mixed with asphalt type emulsion and the tough paper covering is given a special water-repellent treatment. This combination provides an amazing resistance to weather and makes possible open storage on the job, and exposure on the framing during construction without appreciable loss of structural value. It does not warp or buckle. (See technical data for vapor permeability.)

**Adds Structural Strength**—Wet or dry, USG Sheathing provides unusual lateral bracing to the frame. (See technical data.)

**Wind-Tight Joints**—The precision formed, interlocking V-tongue and groove edges snugly fitted, minimize wind infiltration.

## Economical

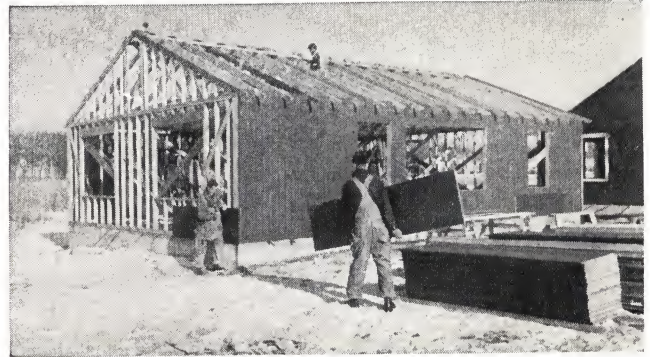
- Low material cost.
- Full dimension—no face loss.
- Minimum of waste—sheets fit standard 16" or 24" stud spacing.
- Fast application—up to 1000 sq. ft. can be applied by one man in eight hours.
- Eliminates building paper except where required by local building regulations.

## STANDARD SPECIFICATIONS

USG Sheathing complies with the following standard specifications for gypsum sheathing board:

Federal Specification SS-S-276.

American Society for Testing Materials Standard Specification A.S.T.M. C79-52, for core-treated, water repellent gypsum sheathing.



USG Sheathing being applied to wood frame house

The following legend appears on the center of the back surface of each board:

"Gypsum, water repellent sheathing complying with A.S.T.M. specifications C79-52."

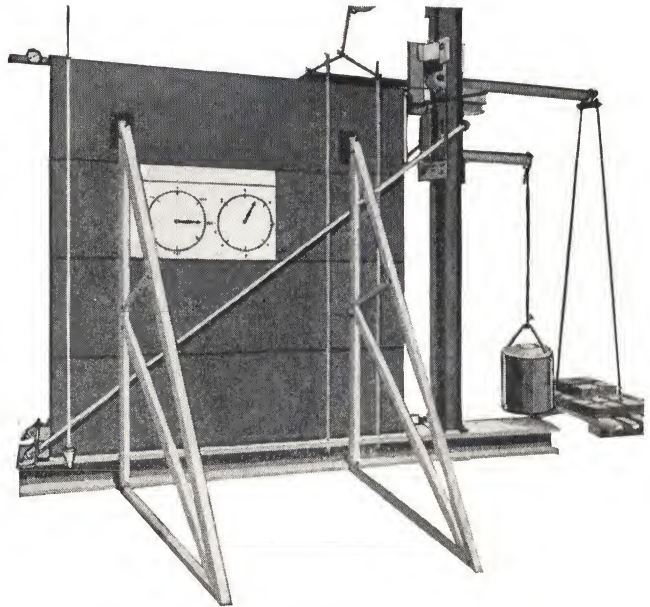
## LIMITATIONS OF USE

### 1. Maximum Stud Spacing

USG Sheathing is designed for use on stud centers up to 24".

### 2. Attachment of Exterior Finishes

Wood siding, wood furring strips, metal lath, wall ties, etc., shall be secured to the framing members by nailing through the USG Sheathing.



USG Sheathing Panel in Lateral Distortion Machine

Load of 1850 lbs. applied at upper right hand corner of 8'x8' Test Panel

Lateral distortion on Dry Panel—.498 inch

Lateral distortion on Wet Panel—1.125 inches

\*Trademark Reg. U. S. Pat. Off.

"USG" and "SHADOW-LOCK" are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHADOW-LOCK" identifies the particular attachment system for asbestos shingles manufactured only by United States Gypsum.

# USG SHEATHING

## TECHNICAL DATA

### 1. STRENGTH TO RESIST LATERAL DISTORTION

Comparative tests were conducted in USG Research Laboratories and attested by Phil C. Huntly, Consulting Engineer. Tested dry, USG Sheathing applied to an 8'x8' panel of 2"x4" framing on 16" centers had a lateral distortion of .498" under a racking load of 1850 lbs.

A similar panel was subjected to the equivalent of 5½ years of average United States rainfall in a giant "weatherometer" and with the same load of 1850 lbs. the distortion was only 1.125 inches.

Under this same load a similar frame sheathed with 1"x8" dry wood sheathing resulted in a distortion of 10.312 inches.

### 2. INSULATION

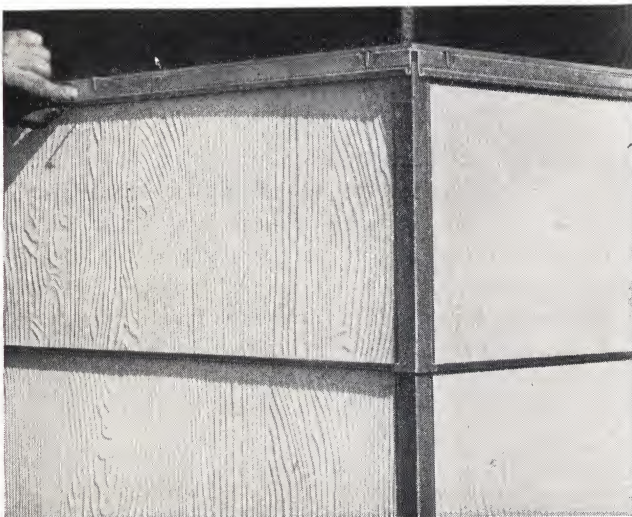
Thermal conductance is 2.86 and thermal resistance is 0.35, both for ½" thickness.

### 3. VAPOR PERMEABILITY

USG Sheathing has an average permeability of 27.3 perms. (One perm equals 1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.)

## SHADOW-LOCK ATTACHMENT SYSTEM

**Description**—USG SHADOW-LOCK Attachment System is a means of attaching asbestos cement siding directly over USG Sheathing with precision-made aluminum channels and corner pieces. This method of attachment creates a striking deep shadow line not obtainable with regular nail on attachment, minimizes shingle breakage because nails do not penetrate the siding, and is economical because it is self-aligning and uses 5% less siding.

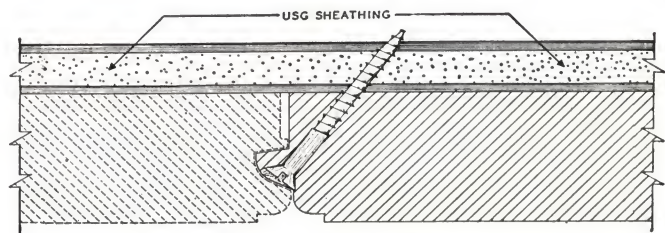


Application of USG Shadow-Lock Attachment System.

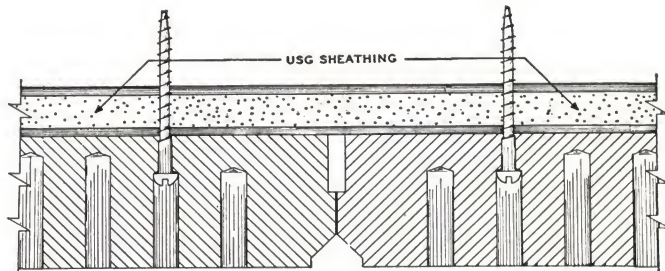
## USE OF USG SHEATHING AS A BASE FOR ACOUSTICAL TILE

USG Sheathing is an excellent incombustible backing for acoustical tile, applied either adhesively or mechanically. When so used, USG Sheathing must be erected at right angles to framing members and nailed 7" on centers for 16" spacing of supports, and 5" on centers for 24" spacing of supports. It may be nailed to Jackson or Pomeroy bars, or to wood framing.

### Wood Fiber Acoustical Tile Applied with Wood Screws



Tongue and Groove Tile.



Beveled Edge Tile.

Use No. 5 or No. 6 wood screw, 1½" long for 1" tile,  
1¼" long for ¾" tile.



A Finished Home on which USG Shadow-Lock System was used.

# USG SHEATHING

## SPECIFICATIONS FOR USG SHEATHING

### SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

### MATERIALS

**Sheathing** shall be USG Sheathing as manufactured by the United States Gypsum Company,  $\frac{1}{2}$ " x 24" x 8'0".

**Nails** shall be galvanized,  $\frac{7}{16}$ " head diameter,  $1\frac{3}{4}$ " long roofing nails, having No. 11 gauge barbed shanks.

### APPLICATION

Apply USG Sheathing with the long dimension across the supports and with the groove edge down, interlocking the tongue and groove edges. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered. Fit snugly around all window and door openings. Secure sheathing to studs with nails spaced approximately 4" on centers, 7 nails per 24" sheathing width per support except (1) where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails shall be spaced approximately 8" on center 4 nails per 24" sheathing width per stud, and (2) when diagonal bracing is used with masonry, nail spacing may be 6" o.c. 5 nails per support. Starter nails shall be not less than  $\frac{3}{8}$ " from edges or ends of sheathing.

### OPTIONAL INCLUSIONS

#### 1. Use of Wood Siding Over USG Sheathing

Apply siding directly over USG Sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of  $1\frac{1}{4}$ " into the studs. End joints of siding shall be over centers of studs.

#### 2. Use of Masonry Veneer Over USG Sheathing

Masonry ties shall be attached with nails driven through the sheathing and into the studs, using nails of sufficient length to penetrate  $1\frac{1}{4}$ " into the studs. (At least 6d common nails.) Ties shall be spaced vertically to conform with coursing of masonry veneer.

**3. Use of Stucco over USG Sheathing**—Stucco may be applied over USG Sheathing by the use of self-furring 3.4 lb. USG Diamond mesh lath nailed with large headed nails of sufficient length to provide at least  $1\frac{1}{4}$ " penetration into studs. See Sweet's catalog or AIA file 20-B-1.

#### 4. Use of Asbestos-Cement Siding Over USG Sheathing

USG SHADOW-LOCK Attachment System is a new method for attaching asbestos cement siding directly over USG Sheathing with precision made aluminum channels and corner pieces. This method of attachment creates a deeper and more beautiful shadow line than obtainable with usual application.

## SPECIFICATIONS FOR USG SHADOW-LOCK ATTACHMENT SYSTEM (Short Form)

### SCOPE

Unless otherwise shown on plans, straight edge asbestos cement siding shingles shall be applied to all exterior walls over gypsum sheathing and held in place by means of the USG SHADOW-LOCK Attachment System.

### MATERIALS

**Channels** shall be USG SHADOW-LOCK Channels 8' long and 1" wide as manufactured by the United States Gypsum Company.

**Corners** shall be USG SHADOW-LOCK Corners  $11\frac{1}{2}$ " long as manufactured by the United States Gypsum Company.

**Nails** shall be USG SHADOW-LOCK Nails 12 gauge galvanized  $1\frac{3}{4}$ " long, with a diamond point and  $\frac{5}{8}$ " hook head.

### APPLICATION

The channels, corners and straight edge asbestos shingles shall be applied and secured in strict accordance with the recommendations of the manufacturer of the attachment system.

#### 5. Use of Wood Fiber Acoustical Tiles Over USG Sheathing

USG Sheathing makes an excellent base to which acoustical tile may be either adhesively or mechanically attached. If the tile is to be adhesively attached, the recommendations of the manufacturer of the tile and adhesive should be followed. The USG Sheathing, however, should be secured as described in the illustrations on preceding page.

### NOTE TO ARCHITECT

#### 1. Federal and A.S.T.M. Specifications

USG Sheathing complies with Federal Specifications for Gypsum Sheathing Board. SS-S-276 and A.S.T.M. (American Society for Testing Materials) Standard Specifications, A.S.T.M. Designation: C79-52 for core-treated, water repellent gypsum sheathing.

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ARCHITECT SERVICE DEPT.

**TECHNICAL INFORMATION**

# BUILDING STEEL

## **PRODUCTS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG COLOR-RITE METAL LATH

## DESCRIPTION

Metal lath is sheet steel that has been slit and expanded to form a multitude of small mesh openings.

It is made from rust-resisting copper alloy steel and is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.) For sizes and weights—See Technical Data page 8.

**USG COLOR-RITE METAL LATH** represents the newest development in the metal lath industry. Ends of bundles are spray painted **red** for all 3.4 lb. lath, **white** for 2.5 lb. diamond mesh and 2.75 lb. Z-rib, **blue** for 4.0 lb.  $\frac{3}{8}$ " riblath. This makes warehousing, inventory and job distribution easier and **positive**. An architect may quickly and **visually** inspect a job to make sure the weight lath he specified is used.

## FUNCTION AND UTILITY

Metal lath is used as a plaster base and as centering for concrete.

**Fire Resistant**—Metal lath and gypsum plaster provide the fire ratings shown on page 8.

**Strength and Reinforcing**—Metal lath embedded within the plaster thickness provides tensile strength in a manner similar to steel reinforcement in concrete slabs, thus providing unusually high

resistance to transverse impact. It decreases the hazards of cracks and failures due to structural movement of the frame.

**Flexible**—Metal lath is readily shaped to ornamental contours to a degree not possible with other plaster bases.

**Quality Plastering**—The use of metal lath as a plaster base is conducive to good plastering because it makes the use of oversanded plaster in the scratch coat and under thickness work impractical.

**Long Range Economy**—Metal lath is intended for highest quality, fire resistant, durable plastering with low maintenance costs.

## LIMITATIONS OF USE

1. The minimum weights of lath for spacing of supports listed in Technical Data on page 8 must be observed.
2. The securing of metal lath to supports should be in accordance with the specifications printed herein.
3. If sand is used for plastering, it must be clean. Unwashed salt water sand should not be used.
4. When abnormally high humidity, moisture, acid fumes or unusual job conditions are anticipated, refer to USG Architect Service representative.
5. When contact, furred or suspended ceilings are used under roof construction, the enclosed space thus established shall be vented in accordance with good engineering practice.

**CAUTION**—Failure to observe these limitations may result in failure.

## USG METAL LATH TYPES

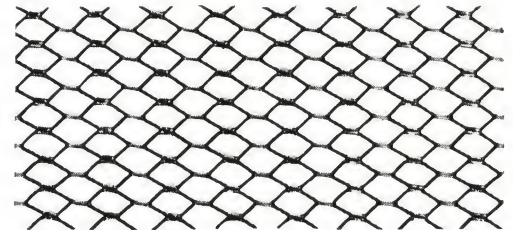
### USG COLOR-RITE DIAMOND MESH LATH

A small mesh (approximately 11,000 meshes per yard) diamond pattern metal plastering base.

A general all-purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings. Nationally available. Also available in self-furring type having  $\frac{3}{8}$ " "dimple" indentations spaced  $1\frac{1}{2}$ " o.c. each way for use as exterior stucco base and for fireproofing columns.

Size: 27" x 96".

Weights: 2.5 lbs. (**End Painted White**) and 3.4 lbs. (**End Painted Red**) per sq. yd.



USG Diamond Mesh Lath

### USG COLOR-RITE $\frac{1}{8}$ " RIBLATH (Flat Riblath)

A herringbone mesh pattern, with  $\frac{1}{8}$ " deep Z-shaped ribs running lengthwise of the sheet at  $1\frac{1}{2}$ " intervals.

Stiffening ribs and herringbone pattern increase rigidity, thus permitting a wider spacing of supports or a saving in the weight of lath required. Particularly suitable for attachment by nailing. Its unusual rigidity permits the application of basecoat plaster, scratch and brown coats, in a "double-up" operation. Small meshes conserve plaster materials.

Size: 24" x 96".

Weights: 2.75 lbs. (**End Painted White**) and 3.4 lbs. (**End Painted Red**) per sq. yd.



USG  $\frac{1}{8}$ " Riblath

## Limitations of Use

Its rigidity makes it unsuitable for contour plastering. Use Diamond Mesh lath.

"ROCKLATH", "PYROBAR", "TRUSSTEEL", "BRIDJOINT" and "BRACE-TITE" are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "ROCKLATH" identifies the particular gypsum plaster base; "PYROBAR" identifies the particular gypsum partition tile; "TRUSSTEEL" identifies the particular truss designed stud; "BRIDJOINT" identifies the particular clips; "BRACE-TITE" identifies the particular lathing system; all manufactured by United States Gypsum.

## USG COLOR-RITE METAL LATH TYPES (Cont'd)

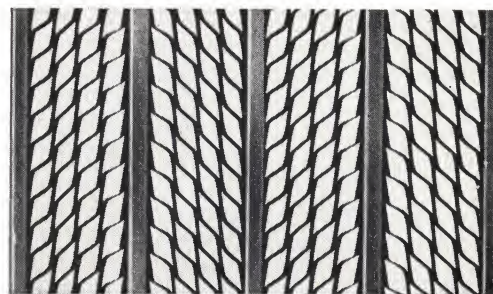
### USG COLOR-RITE 4-MESH Z-RIBLATH

A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plasterings. An excellent nail-on lath, or for tie-on work on flat ceilings. Size: 27" x 96".

Weights: 2.75 lbs. (*End Painted White*) and 3.4 lbs. (*End Painted Red*) per sq. yd.

#### Limitations of Use

Use Diamond Mesh lath for contour plastering.



USG 4-Mesh Z-Riblath

### USG COLOR-RITE 3/8" RIBLATH

A herringbone pattern mesh with 3/8" V-shaped ribs running lengthwise of the sheet at 4 1/2" intervals, with inverted intermediate 3/16" ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16" o.c. and not more than 24" o.c. and for 2" solid studless metal lath and plaster partitions. Used as a centering for concrete floor and roof slabs. See Technical Data page 15.

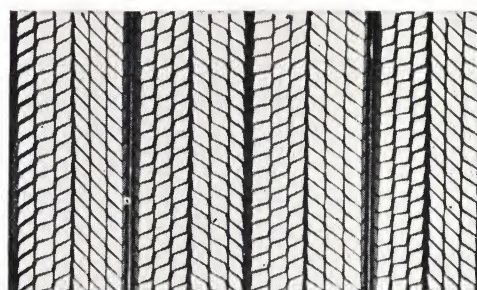
Size: 27" x 96".

Weights: 3.4 lbs. (*End Painted Red*) and 4.0 lbs. (*End Painted Blue*) per square yard.

#### Limitations of Use

Its extreme rigidity makes 3/8" Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to 3/8" rib, minimum ground thickness must be 1".



USG 3/8" Riblath

### USG 3/4" RIBLATH

A herringbone pattern mesh with 3/4" deep V-shaped ribs lengthwise of the lath at 6" intervals.

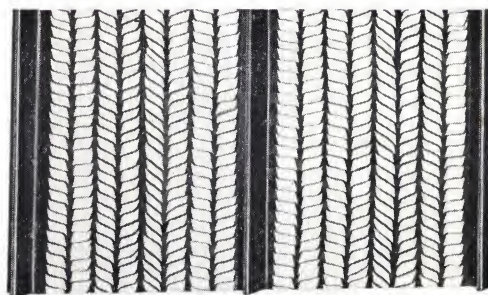
A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs. (See Data on page 15.)

Sizes: 2' x 8', 2' x 10' and 2' x 12'.

Weights: .60 lb. and .75 lb. per square foot.

#### Limitations of Use

Not recommended as a plastering lath.



USG 3/4" Riblath

### USG EXPANDED METAL STUCCOMESH

A 1 3/8" x 3 1/8" diamond pattern mesh made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

#### Limitations of Use

Should not be applied without using 1 1/2" galvanized furring nails.

When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1 1/8" into studs.



USG Expanded Metal STUCCOMESH

## USG LATHING ACCESSORIES

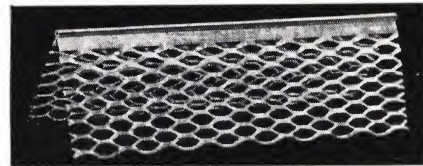
### USG CORNER BEADS

USG corner beads should be used on all external plaster angles to provide: (1) plaster protection, (2) true and straight lines at angles and (3) grounds for plastering.

Lengths: 8', 9', 10' and 12'. Gauge of Steel: 26 gauge galvanized.

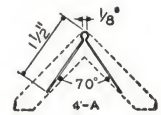
#### 1-A EXPANDED CORNER BEAD

Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.



#### 4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.



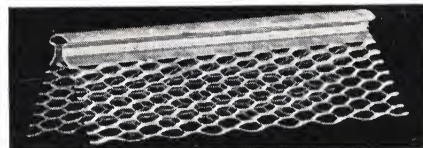
#### 5-A BULL NOSE CORNER BEAD

A  $\frac{3}{4}$ " radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.



#### 10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with  $2\frac{1}{2}$ " wide expanded flanges. Especially suitable on irregular corners.

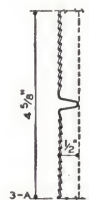
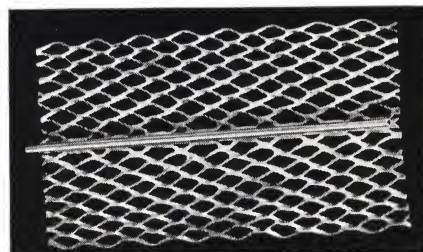


### USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement or terrazzo base. Lengths: 10' 0". Gauge of steel: 26-gauge galvanized steel.

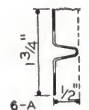
#### 3-A EXPANDED BASE SCREED

A flush type  $\frac{1}{2}$ " ground (job shimmed for  $\frac{3}{4}$ " grounds) with wide flexible expanded flanges for added reinforcement or for attachment to uneven surfaces. Used as a dividing point between plastered surfaces and cement in terrazzo.



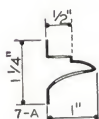
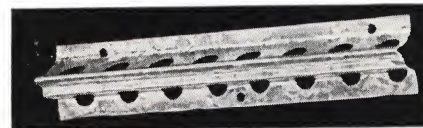
#### 6-A PLAIN BASE SCREED

A flush type  $\frac{1}{2}$ " ground (job shimmed for  $\frac{3}{4}$ " grounds), used at the juncture of differing finishes; as between plaster and terrazzo surfaces.



#### 7-A CURVED POINT BASE SCREED

Use where base or wainscot projects beyond plastered surface. For  $\frac{1}{2}$ " plaster ground (job shimmed for  $\frac{3}{4}$ " grounds) and  $\frac{1}{2}$ " projection.



#### 8-A PICTURE MOULD

A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds  $\frac{1}{2}$ " (job shimmed for  $\frac{3}{4}$ " grounds).



## USG LATHING ACCESSORIES (Cont'd)

### USG CASING BEADS

USG Casing Beads are used as a plaster stop and trim around window and door openings.

Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ ")
138	Quarter Rd.	Short	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ")
60	Semi-Square	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ ")
		Short	22	( $\frac{1}{2}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ")
66	Square	Expanded	24	( $\frac{1}{2}$ ", $\frac{3}{4}$ ")
		Short	22	( $\frac{1}{2}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ")

All casings are furnished in 7', 8' and 10' lengths of galvanized steel for use with metal lath, ROCKLATH\* or masonry construction. *Caution*—In order to insure proper grounds for plastering,  $\frac{3}{4}$ " casing beads are recommended for use in conjunction with metal lath, clay tile or brick;  $\frac{7}{8}$ " casing beads are recommended when the flange is applied under ROCKLATH plaster base.

$\frac{1}{2}$ " casing beads are recommended over PYROBAR\* and when flange is applied over ROCKLATH.

### USG 2" PARTITION TERMINAL

For use as a vertical partition terminal for 2" solid metal lath or ROCKLATH partitions, or as a ceiling runner where 2" partitions join an unplastered surface. Cap is formed of 18 gauge steel welded to a 24 gauge punched runner. Standard length 8'2" and prime coated.

### USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.

Lengths: 16' or 20'

Weights:  $\frac{3}{4}$ "—300 lbs. per M Lin. Ft.

$1\frac{1}{2}$ "—475 lbs. per M Lin. Ft.

### USG CEILING RUNNERS

**L-Type**—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

**Z-Type**—A specially designed steel angle for fastening to the ceiling in order to provide positive anchorage and alignment of  $\frac{3}{4}$ " channels in either solid partition construction or exterior wall furring.

### USG METAL BASE

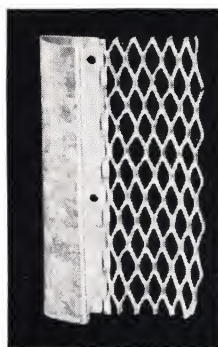
A flush, clip-on metal base system consisting of a  $2\frac{1}{2}$ " high face plate formed from 18-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the feature mounting snap-on application to the double base clip used in "2" solid plaster partition or to the single base clip and stud base clip used with hollow partitions or furred walls.

The face plates are easily notched and bent to form inside and outside corners, and are butted and internally spliced for continuous runs uninterrupted from one type of wall construction to another.

\*Trademarks Reg. U. S. Pat. Off.

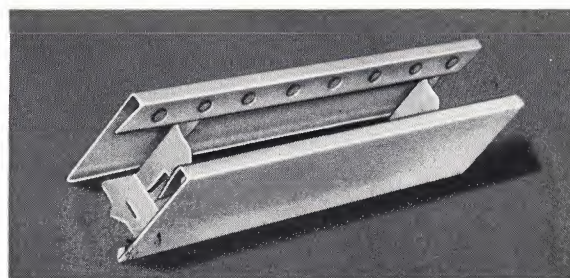
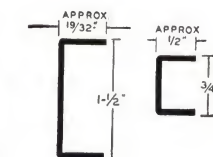
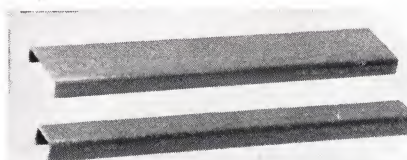
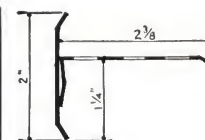
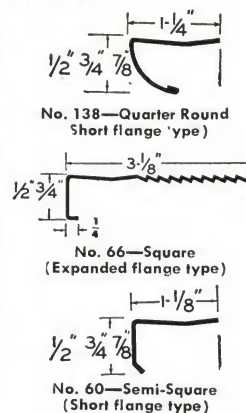
### METAL DOOR AND WINDOW CASING BEADS



No. 4—Expanded flange



No. 66—Short flange

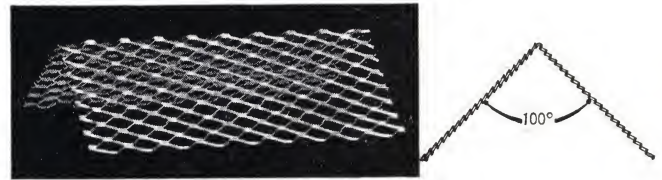


## USG LATHING ACCESSORIES (Cont'd)

### USG SELV-EDGE CORNERITE AND STRIPLATH

**Cornerite** is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle, length 96". Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, BRIDJOINT\* lathing system. If used, it is secured to the lath, not the supports.)

**Striplath** is a strip of 2.5 lb. Diamond Mesh lath, copper alloy, painted, 96" long—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.



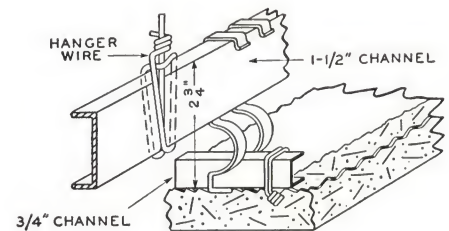
### USG METAL LATH RESILIENT PLASTERING SYSTEM

Specially formed steel clips to provide a non-rigid, or floating attachment of metal lath or channels to the structural frame; affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss. (See Data Table on page 9.)

#### Resilient Clip No. 100

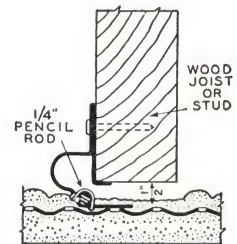
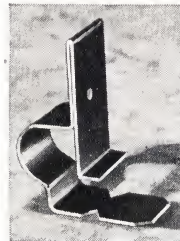
For resiliently attaching 3/4" cold rolled furring channels to 1 1/2" cold rolled runner channels in suspended ceiling construction.



#### Resilient Clip No. 200

For wood studs or joists. Clips spaced not over 12" o.c. for ceiling construction or 16" o.c. for sidewalls.

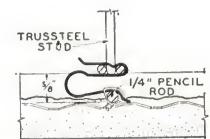
Attached by nailing with 13-gauge, 1 1/8" lathing nails. Metal lath is floated 1/2 in. free of the framing members by wire tying to a 1/4" pencil rod, nested and tied to the inside of the tongue of the resilient clip.



#### Resilient Clip No. 400

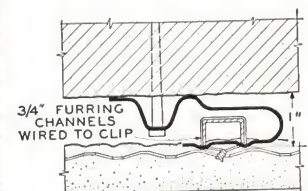
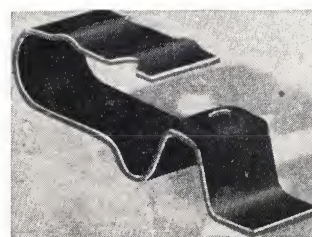
For TRUSSTEEL\* Studs. Snapped in place, 16" o.c., over the outer flanges of the TRUSSTEEL studs.

Metal lath is floated 1/2 in. free of the steel studs by wire tying to a 1/4" pencil rod nested and tied to the outside of the protruding tongue of the resilient clip.



#### Resilient Clip No. 500

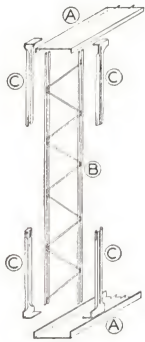
For masonry walls. Nailed in place over PYROBAR, or light weight concrete units, using 2" staples or 10d cut nails driven into the mortar joints or solid sections of the units. Attached similarly to clay tile or brick by driving 10d cut nail into the mortar joint. Metal lath is resiliently furred out 7/8" from the face of masonry by wire tying to 3/4" cold rolled channels wire tied inside the protruding tongue of the resilient clip.



Spacing of Furring Channels—	12"	16"	19"	24"
Spacing of No. 500 Clips—	24"	18"	15"	12"

\* Trademark Reg. U. S. Pat. Off.

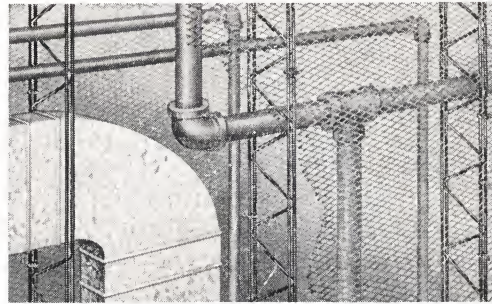
# USG TRUSSTEEL\* STUDS



## DESCRIPTION

This is a truss design stud for the erection of hollow non-load bearing fire-proof partitions. Outer chords and diagonal struts are constructed of round rods. As shown in the sketch, the component parts are (A) 22 gauge top and bottom runner tracks, (B) double 7 gauge rods welded to cross web at all contact points, (C) attachment shoes for connecting the studs to the runners.

Sizes—Consult technical data below.



## FUNCTION AND UTILITY

**Flexibility**—The stud construction by its open web design allows encasement of pipes, conduits, heat controls, oxygen tubes, and small ducts, horizontally and vertically without weakening the partition structurally by chasing. Diagonal struts are easily cut to accommodate larger pipes or ducts.

**Light Weight**—The finish partition weighs 10 to 17 lbs. per sq. ft., depending on the type of lath and plaster used.

**Fireproofing**—Fire tests conducted at nationally recognized laboratories give fire ratings of 1 to 2 hours depending on type of lath and plaster used. (See technical data below)

**Strength**—This partition has more than adequate strength, comparing favorably with other non-load bearing partitions used in modern building construction and is accepted nation wide by building code authorities.

**Economy**—Material costs are low, job erection is fast and provides substantial installation economy for mechanical trades. (Partition assembly in materials and trade practices parallels standard wood stud construction but with incombustible materials.)

**Adaptable**—Provided in four stud widths, available for varying ceiling heights and for use with Resilient Clips where additional Sound Transmission Loss is required. Plaster base may be either metal lath or ROCKLATH. (See AIA File No. 20-B-2 for ROCKLATH details and door buck attachments.)

## LIMITATIONS

USG TRUSSTEEL Studs are designed for non-load bearing partitions only.

Stud spacing is determined by the type of plaster base selected. Partition height should not exceed maximum heights shown in Technical Data.

## TRUSSTEEL STUDS TECHNICAL DATA

(All tests made by nationally recognized laboratories)

Stud Width	Finished Wall Thickness Normal Grounds		Maximum Partition Height	FIRE RATINGS AND SOUND TESTS				
	DiamondMesh ⅛" Riblath	¾" Riblath ROCKLATH		Partition Construction		Plaster Thickness	Fire Rating	Average Sound Transmission and Loss in Decibels
				Lath	Plaster			
2½"	4"	4½"	14 Ft.	Metal Lath	Gypsum—Sand 1:2, 1:3	¾"	45 Min.	40.5 (1)
3¼"	4¾"	5¼"	16 Ft.		Gypsum—Sand 1:2, 1:2	¾"	1 Hour	
4"	5½"	6"	18 Ft.		Gypsum—Wood Fiber	⅞"	2 Hour	
6"	7½"	8"	20 Ft.		Gypsum—Perlite 100:2, 100:3	1"	2 Hour	
Stud Lengths: 7' 0" to 20' 0" in increments of 3". Runner Tracks: 2½", 3¼", 4" and 6" widths by 8' 2" long.			Perforated ROCKLATH and TRUSS-LOCK Clips		Gypsum—Sand 1-2, 1:2 Gypsum—Perlite 100:2½	½" ½"	1 Hour 1 Hour	48 44

## RECOMMENDED STUD SPACING

Type of Lath	TRUSSTEEL Stud Spacing
2.5 lb. Diamond Mesh Lath	12 Inches
3.4 lb. Diamond Mesh Lath	16 Inches
2.75 lb. 1/8" Riblath	16 Inches
3/8" Plain or Perforated ROCKLATH	16 Inches
3.4 lb. 1/8" Riblath	19 Inches
3.4 lb. 3/8" Riblath	24 Inches
4.0 lb. 3/8" Riblath	24 Inches

## NOTES:—

(1) Average decibel transmission loss 54.7, when furred both sides with USG No. 400 Resilient Clips and Pencil Rods supporting metal lath and plaster.

## USG METAL LATH TECHNICAL DATA

### TYPES AND WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS

Type of Lath	Weight	Type of Steel	Size Sheets	Maximum Allowable Spacings				
	Per Square Yard			Vertical Supports			Horizontal Supports	
				Wood	Metal		Wood or Concrete	Metal
					Solid Partitions	Others (5)		
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27"x96"	16"	16"	12"	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	13½"
Diamond Mesh	3.4 lb.	Galvanized (2)	27"x96"	16"	16"	16"	16"	13½"
⅛" Z-Rib	2.75 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	12"
⅛" Z-Rib	3.4 lb.	Copper Alloy	27"x96"	19"	24"	19"	19"	19"
⅜" Rib	3.4 lb.	Copper Alloy	24"x96"	24"	24"	24"	24"	24"
⅜" Rib	4.0 lb.	Copper Alloy	24"x96"	24"	24"	24"	24"	24"
STUCCOMESH (3)	1.8 lb.	Copper Alloy	48"x99"	16" (3)				
STUCCOMESH	3.6 lb.	Copper Alloy	48"x99"	16" (3)				
¾" Riblath	Per Sq. Ft.							
	0.60 lb.	Copper Alloy	2'x8'					
	0.75 lb.	Copper Alloy	10'&12"	See table on page 15 for ¾" Riblath.				

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper. (2) Galvanized lath is cut from galvanized sheets.

(3) STUCCOMESH generally applied over exterior sheathing. (4) Not recommended, except for fireproofing

(5) Including vertical furring.

of steel shapes.

### SIZE AND SPACING OF HANGERS FOR SUSPENDED CEILINGS

Maximum Ceiling Area Supported Per Hangers	Maximum Center to Center Spacing of Hangers	Minimum Size of W&M Gage Galvanized Wire	Alternate Types and Sizes of Hangers (1)
Up to 12½ Sq. Ft.	3 x 4 Ft.	No. 9	⅜" or ¼" Round Mild Steel Rods or 1"x⅜" Flat Mild Steel Bars
Up to 16 Sq. Ft.	4 x 4 Ft.	No. 8	

(1) Galvanized rods and rust inhibitive painted or galvanized straps recommended where severe moisture conditions may occur.

### SIZE AND SPACING OF MAIN RUNNERS FOR SUSPENDED CEILINGS

Center to Center Spacing of Runners	Size	Weight Per 1000 Feet	Maximum Spacing of Hangers
Up to 3 Feet	1½" Channel	475 lbs.	4'-0"
3'-6"	1½" Channel	475 lbs.	3'-6"
4'-0"	1½" Channel	475 lbs.	3'-0"

### SIZE AND SPACING OF FURRING MEMBERS

Center to Center Spacing of Supports	Size	Weight Per 1000 Feet	Maximum Spacing
3'-0"	¾" Channel	300 lbs.	24"
3'-6"	¾" Channel	300 lbs.	19"
4'-0"	¾" Channel	300 lbs.	16"

## USG METAL LATH TECHNICAL DATA (Cont'd)

### FIRE TEST DATA

#### Panel Type

(All tests made by nationally recognized laboratories)

Construction	Type Base	Plaster and Aggregate	Thickness	Rating
PARTITIONS				
Wood Frame	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	45 Minutes
		Gypsum-Sand, 1:2, 1:2	3/4"	1 Hour
		Gypsum-Sand, 1:2, 1:3	7/8"	1 Hour
		Gypsum Wood Fiber	3/4"	1 1/2 Hour
		Gypsum-Vermiculite 100:2 1/2, 100:3 1/2	3/4"	1 Hour
Solid	Expanded Metal Lath	Gypsum Perlite 100:2 1/2, 100:2 1/2	1 1/2"	1 Hour
		Gypsum-Sand, 1:2, 1:2	2"	1 Hour
		Gypsum-Perlite 100:2, 100:3	2 1/2"	2 Hour
TRUSSTEEL Studs	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	45 Minutes
		Gypsum-Sand, 1:2, 1:2	3/4"	1 Hour
		Gypsum-Sand, 1:2, 1:3	7/8"	1 Hour
		Gypsum Wood Fiber	7/8"	2 Hour
		Gypsum Perlite 100:2, 100:3	1"	2 Hour
CEILINGS				
Wood Frame	Expanded Metal Lath (A)	Gypsum Sand, 1:2, 1:3	3/4"	1 Hour
Steel Joists (B)	Expanded Metal Lath	Gypsum-Sand, 1:2, 1:3	3/4"	2 Hour
		Gypsum-Vermiculite, 100:2, 100:3	3/4"	3 Hour
		Gypsum Wood Fiber	1"	3 Hour
		Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
Cellular Steel Floor (C)	Expanded Metal Lath	Gypsum Wood Fiber	1"	4 Hour
		Gypsum-Perlite, 100:2, 100:3	1"	4 Hour
Cellular Steel Floor (D)	Expanded Metal Lath	Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
Suspended Channel (E)		Gypsum-Vermiculite, 100:2, 100:3	1"	4 Hour
COLUMNS				
Steel Section	Expanded Metal Lath (F)	Gypsum-Sand, 1:2, 1:3	3/4"	1 Hour
		Gypsum Perlite, 100:2, 100:3	1"	2 Hour
		Gypsum-Perlite 100:2, 100:3	1 3/8"	3 Hour
		Gypsum-Perlite 100:2, 100:3	1 3/4"	4 Hour

(A) Lath applied with 1½" 11 gauge, 7/16" head barbed roofing nails, 6" o.c.

(B) 2½" reinforced concrete slab on Riblath or 2" precast gypsum tile above.

(C) Ceiling suspended 9" or more below floor slab.

(D) Ceiling suspended 3" or more below floor slab.

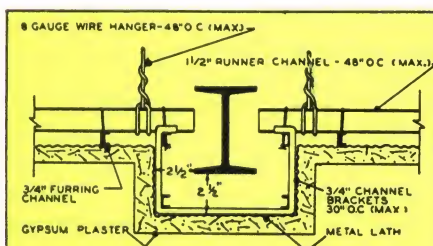
(E) Incombustible construction above.

(F) Self furring lath wrapped tight to column, or diamond mesh on channel framing.

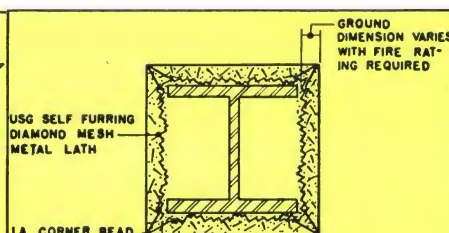
### SOUND TRANSMISSION LOSS—PARTITIONS

2 x 4 wood studs; metal lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides	38.7 decibels
2" x 4" wood studs; USG No. 200 Resilient Clips; Pencil Rods; Metal Lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	52.0 decibels
2" solid metal lath and gypsum plaster smooth white coat on both sides.	39.4 decibels
¾" TRUSSTEEL Studs; USG No. 400 Resilient Clips; Pencil Rods; Metal Lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	54.7 decibels
¾" TRUSSTEEL Studs; metal lath; scratch and brown coats of gypsum plaster, smooth white coat on both sides.	40.5 decibels

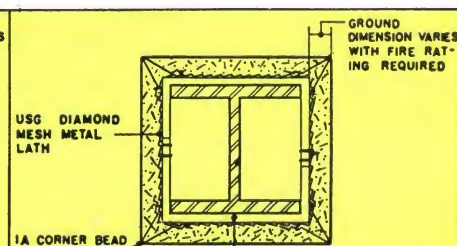
### BEAM AND COLUMN FURRING DETAILS



BEAM & GIRDER FURRING



COLUMN FURRING



ALTERNATE METHOD OF COLUMN FURRING

NOTE: FOR FIRE RATINGS, TYPE OF AGGREGATE, PROPORTIONS AND THICKNESS OF PLASTER SEE FIRE TEST DATA ABOVE

# USG METAL LATH AND LATHING SPECIFICATIONS

## NOTES TO ARCHITECT:

Paragraphs I, II, etc., are recommended as basic requirements for all metal lathing specifications. Paragraphs S-1, S-2, etc., apply to the erection of lath for various constructions and only those applicable to the job should be included.

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel framing is used, it is recommended that partitions be located so that at least a 1" offset in plaster face is provided at juncture of partitions with columns and/or beams, or that either of the following procedures be employed:

1. Furring off the face of such members so that there is at least 1" between back of metal lath and such faces.
2. By scatter nailing, 12" o.c., No. 30 asphalt felt and the metal lath across the faces of such structural members.

## I. SCOPE

Unless otherwise indicated, all lathing and furring shall be of metal, as herein described. (Or enumerate the areas.) Partitions shall be accurately located as shown on plans.

## II. GENERAL CONDITIONS

In cold weather, buildings shall be glazed and heated before lathing.

## III. MATERIALS

Unless specifically noted otherwise, all materials herein listed shall be protected by a coat of rust inhibitive paint after fabrication, bundled or packaged with positive identification.

**A. Metal Lath**—shall be USG COLOR-RITE metal lath, manufactured by the United States Gypsum Company, made from copper alloy steel sheets. Lath shall be colored to identify weight (red for 3.4, white for 2.5 diamond mesh and 2.75 flat Rib Lath; blue for 4.0 Rib Lath) and shall be provided in the following types and sizes:

- (2.5 lbs.) (3.4 lbs.) USG COLOR-RITE Diamond Mesh Lath—size: 27" x 96".
- (3.4 lbs.) USG COLOR-RITE Diamond Mesh Lath galvanized—size: 27" x 96".
- (2.5 lbs.) (3.4 lbs.) USG COLOR-RITE Diamond Mesh—self-furring lath—size: 27" x 96".
- (2.75 lbs.) (3.4 lbs.) USG COLOR-RITE  $\frac{1}{8}$ " Rib Lath (Flat Rib Lath)—size: 24" x 96".
- (2.75 lbs.) (3.4 lbs.) USG COLOR-RITE 4-mesh Z-Rib Lath—size: 27" x 96".

(3.4 lbs.) (4.0 lbs.) USG COLOR-RITE  $\frac{3}{8}$ " Rib Lath—size: 27" x 96".

(1.8 lbs.) (3.6 lbs.) USG Expanded Metal Stucco Mesh— $1\frac{3}{8}$ " x  $3\frac{1}{8}$ " mesh.

## B. Lathing Accessories

**1. Channels** shall be 16-gauge cold rolled steel channels, as manufactured by the United States Gypsum Company.

- (a)  $\frac{3}{4}$ ", weighing not less than 300 lbs. per 1,000 lineal feet.
- (b)  $1\frac{1}{2}$ ", weighing not less than 475 lbs. per 1,000 lineal feet.
- (c) Other

**2. Pencil Rods** for furring shall be not less than  $\frac{1}{4}$ " in diameter and of mild steel.

**3. Hangers** shall be 9-gauge, galvanized annealed steel wire.

**4. Tie Wire** shall be 16-gauge and 18-gauge galvanized annealed steel wire, as specified herein.

**5. Corner Bead**—Shall be USG, as follows:

- 1-A Expanded Corner Bead
- 4-A Flexible Corner Bead
- 5-A Bull Nose Corner Bead
- 10-A Expanded Bull Nose Corner Bead

**6. Corner Bead Clips**—Shall be USG No. 9-A Corner Bead Clips—galvanized steel.

**7. Base Screed**—Shall be USG

- 3-A Expanded Base Screed
- 6-A Plain Base Screed
- 7-A Curve Point Base Screed
- 8-A Picture Mould

**8. Casing Bead**—Shall be USG

- No. 4 Expanded Flange Quarter Round
- No. 138 Short Flange Quarter Round
- No. 60 Expanded Flange—Semi-Square
- No. 60 Short Flange—Semi-Square
- No. 66 Expanded Flange—Square
- No. 66 Short Flange—Square

**9. Cornerite**—Shall be USG Selv-edge Cornerite, (2" x 2") (3" x 3").

**10. Striplath**—Shall be USG Selv-edge Striplath, (4") (6").

## USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

**11. 2" Partition Terminal**—Shall be composed of a cap formed of 18-gauge steel, welded to 24-gauge punched runner, as manufactured by United States Gypsum Company.

**12. Metal Studs**—Shall be TRUSSTEEL studs, manufactured by United States Gypsum Company, formed with not less than 7-gauge wire. Stud sizes shall be as indicated on drawings or as follows: (2½"), (3¼"), (4"), (6").

**13. Ceiling Runner**—As manufactured by United States Gypsum Company shall be:

L Type

Z Type

**14. Metal Base**—Shall be 2½" high, face plate formed from 18-gauge steel, weighing not less than 600 lbs. per 1,000 lineal feet and as manufactured by the United States Gypsum Company complete with:

Splice plates

Single base clips for furred walls

Double base clips for 2" solid partitions

Stud base clips for hollow stud partitions

Masonry base clips for masonry walls

**15. Metal Lath Resilient Clips**—Shall be as manufactured by the United States Gypsum Company:

No. 100 for Suspended Ceilings

No. 200 for Wood Studs and Joists

No. 400 for TRUSSTEEL Studs

No. 500 for Masonry walls

**16. Wall Furring Brackets**—Shall be USG galvanized steel adjustable wall furring brackets.

### IV. GROUNDS

Unless otherwise specified, grounds shall be set to provide not less than ¾" thickness of plaster measured from the flat portion of the back plane of the metal lath exclusive of ribs and be securely wire tied or nailed into place. (Note: Greater thicknesses are required for certain fire ratings.)

### V. ERECTION OF METAL LATH

All metal lath shall be applied with the long dimension of the sheet across the supports. Rib lath shall be applied with the projections against the supports.

The ends of all lath shall be lapped not less than 1". If end laps are made between supports, they shall be adequately laced or tied with No. 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½". The sides of rib lath shall be lapped by nesting outside ribs. Side laps shall be secured to every support unless otherwise specified, and shall be wire-tied

between supports not to exceed 9" intervals. All metal lath except ⅜" riblath shall be started at one support away from the corner and be bent into the corner and carried on to the abutting wall. Where ⅜" rib lath is used, it shall be butted into the corners and cornerite shall be applied over the abutting lath and wired at 6" intervals along each edge in corners; cornerite shall be wire-tied along the edge only, not in the corner. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent course shall be staggered.

Metal lath shall be secured to supports with 18 gauge tie wire at intervals not exceeding 6". Ends of tie shall have three full twists, then bent up in the plane of the lath.

Corner Beads, Casing Beads, Base Screeds, Picture Molds, etc., shall be positioned by securely wiring to the metal lath at not more than 12" intervals. Attachment to masonry or other solid construction shall be by nailing at intervals of not more than 12". ½" concrete stub nails shall be used for attachment to concrete.

### VI. ERECTION OF GRILLAGES

**A. Hangers** shall be spaced not over (3'-0") (3'-6") (4'-0") in the direction of the main runners and not over (4'-0") (3'-6") (3'-0") in the direction at right angles to the main runners, and within 6" of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity.

All hangers shall be of such lengths to (wrap around or be securely attached to steel beams or joists) (provide suitable anchorage in concrete by attachment to reinforcing steel, or by being looped and embedded 2" in concrete) and to provide for full saddle tie to main runner at indicated height.

**B. Main runners** shall be placed not over (4'-0") (3'-6") (3'-0") on center, properly positioned relative to the indicated ceiling height, leveled and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6" of the walls to support the ends of the cross furring.

At main runner splices, the ends shall be overlapped not less than 12", with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

**C. Cross furring channels** shall be spaced (12") (13½") (16") (19") (24") and securely saddle tied with two strands of 16 gauge tie wire to (main runners) (steel joists).

Cross furring shall not be let into or come in contact with abutting masonry walls.

At splices of cross furrings, the ends shall be overlapped not less than 8", with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont.)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS

### S-1. Nailing to Wood Supports

Metal lath shall be secured to framing at intervals not to exceed 6" o.c. by one of the following methods:

1. Metal lath shall be attached to vertical framing members with:

(a) 4d common nails driven to  $\frac{3}{4}$ " penetration and bent over to engage at least three strands of diamond mesh lath or a rib of rib lath.

(b) 1" roofing nails,  $\frac{7}{16}$ " head, driven home and so as to engage at least two strands of diamond mesh or through the rib of rib lath.

(c) 1", 14-gauge wire staples, driven home without crushing the lath strands and engaging at least two strands of diamond mesh lath or through the rib of rib lath.

2. Metal lath shall be attached to horizontal framing members with:  $1\frac{1}{2}$ ", 11-gauge barbed roofing nails with  $\frac{7}{16}$ " head, to engage at least two strands of diamond mesh or through the rib of rib lath.

### S-2. Nailing to Nailable Steel Supports

Metal lath shall be secured to framing at intervals not to exceed 6" o.c. with nails of size and type recommended by manufacturer of nailable steel supports.

### S-3. Metal Lath Secured to Steel Joists

Metal lath shall be secured to the lower flanges of steel joists with one loop of 16-gauge tie wire, or two loops of 18-gauge tie wire, at intervals not to exceed 6" o.c. Ends of tie wire shall be given at least three twists.

### S-4. Metal Lath Attached to Rib Concrete Construction.

Hangers for attaching metal lath directly to the underside of concrete joists form construction shall be provided with a loop or other deformation to positively enter the concrete or be secured to the reinforcing steel.

They shall be of not less than (2 strands of No. 14-gauge galvanized annealed wire when twisted as for tie wire) or (No. 10-gauge galvanized wire when struck over to support the lath). Hangers shall be spaced at not-to-exceed 5" intervals along bottom of the joist.

Where spacing of concrete ribs exceeds 24" center to center, there shall also be placed in the forms 12 gauge galvanized wire hangers midway between the concrete ribs, spaced not to exceed 36" on centers.  $\frac{3}{4}$ " furring channel shall be positioned parallel to the ribs and vertically as required by the indicated ceiling heights by saddle tying to these hangers. Metal lath shall be  $\frac{3}{8}$ " rib lath weighing not less than 3.4 lbs. sq. yd.,

securely attached to the underside of the concrete joist by twisting the No. 14-gauge wire hangers as for tie wire, or by clinching of other types of hangers, and by tying to the channels with No. 18-gauge galvanized annealed wire at intervals not exceeding 6" o.c. A tie wire shall be placed at side laps of sheets between supports. Where spacing of concrete joists does not exceed 24" center to center, the  $\frac{3}{8}$ " rib metal lath shall be securely attached to the undersides of the concrete joists by twisting the No. 14-gauge wire hangers as for tie wires or by clinching of other types of hangers.

### S-5. Furred Ceiling on Wood Joists

16d common nails spaced to conform to spacing of furring members, shall be driven horizontally through each joist at least 2" above the lower edge; the point and head to project equally from each side of joist.

Channel furring shall be attached at right angles to joist, shall not exceed a spacing of (12") (13 $\frac{1}{2}$ ") (16") (19") (24"), flush against the bottom edges by securely wire-tying the furring to each nail with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength. Metal lath shall be attached to the steel furring with wire ties at intervals not to exceed 6".

### S-6. Furred Ceiling on Steel Joists

Furring members shall be  $\frac{3}{4}$ " cold rolled channels and shall not exceed a spacing of (12") (13 $\frac{1}{2}$ ") (16") (19") (24") and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength.

### S-7. Metal Lath Vertical Furring

USG Adjustable Wall Furring Brackets shall be attached to the masonry walls not over 4" from columns or other abutting construction, and not over 36" on center vertically and horizontally, and as required above and below windows, using one 2" cut nail in top hole of bracket in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks, or using  $\frac{5}{8}$ " concrete stud nails or power-driven nails in monolithic concrete. In masonry construction, brackets can be embedded in mortar joints as masonry is laid. Furring channels shall be laid horizontally on the furring brackets with the legs down, and wire-tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

Vertical members shall be not less than  $\frac{3}{4}$ " cold rolled channels. They shall be spaced (12") (13 $\frac{1}{2}$ ") (16") (19") (24"). They shall be securely saddle-tied to horizontal members with a double strand of 16-gauge wire at each crossing, and

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS (Cont.)

shall be securely anchored to the floor and ceiling construction. Optional—Vertical  $\frac{3}{4}$ " channels may be secured to horizontal  $\frac{3}{4}$ " channels placed 6" from the floor and/or top of vertical channels. These horizontal channels to be secured to the wall in the same manner as specified previously.

(Note: Where dampproofing has been damaged in installation of attachments, it shall be pointed up with the same material before proceeding with the installation of the furring.)

### S-8. Channel Studs, Metal Lath and Plaster SOLID PARTITION

Studs shall be not less than  $\frac{3}{4}$ " cold rolled channels spaced (16") (24"), securely anchored at floor by:

(Engaging tongue of the USG Double Metal Base Clip.)

(Bending ends of studs and nailing directly to concrete floors with concrete stub nails or nailing to wood runner fastened to floor.)

(Setting in holes of Z type ceiling runner nailed to wood runner or floor.)

(Wire tying to L type ceiling runner nailed to wood runner or floor.)

Studs shall be securely fastened to the soffit of the floor or roof above, or to the joists or to a suspended ceiling by:

(Inserting in Z type ceiling runner nailed or wire-tied to ceiling.)

(Wire tying to L type ceiling runner nailed or wire-tied to ceiling.)

(Punching studs through ceiling lath and wire-tying to furring channels.)

Top clearance shall be such that studs will not bow when erected.

Where 2-piece studs are necessary, they shall be spliced by lapping not less than 8", with flanges interlocked, and securely wire tying 1" from each end of splice.

Studs adjacent to openings shall be securely anchored to the frames or bucks or studs adjacent to bucks may be omitted if other means of anchoring lath is provided and bucks are temporarily braced before plastering. Where wood bucks are used, 8d nails shall be driven in pairs into both jambs of the wood buck at intervals of 2', beginning 9" above floor, and channel studs securely wire-tied to the nails.

A horizontal reinforcing ( $\frac{1}{8}$ " by  $1\frac{1}{4}$ " flat iron) ( $\frac{3}{8}$ " diameter rod) shall be saddle tied to the channels 8" above top of door to the channel side and extend continuously past the first studs at full spacings beyond the line of door frame or buck.

Metal lath shall be secured, one side only, to each channel stud by 18-gauge galvanized tie wire at 6" intervals.

### S-9. Studless Metal Lath and Plaster Solid Partitions

(USG Metal Base) (2" wide by  $1\frac{5}{8}$ " high routed wood floor runners) shall be securely attached to the floors by means of fasteners suitable to floor materials.

L-Type ceiling runners shall be located so that the metal lath will be in the center of the partitions and plumb. (Runners shall be fastened to concrete ceilings with stub nails or other approved means.) (Runners shall be fastened to metal lath ceilings with wire-ties at approximately 12" spacings.)

3.4 lb.  $\frac{3}{8}$ " rib lath shall be erected with the long dimension of the sheet vertical (attached to floor runners) (Set in groove of grouted metal base assembly) and securely anchored to ceiling runners with wire ties 8" o.c. A wire tie shall be placed where sheets nest approximately 9" o.c. (Metal lath shall be wire tied to inserts of steel door frames.) (Where wood bucks are used, metal lath shall be wire-tied to USG L-type runner nailed not over 8" o.c. to back of buck.)

Temporary bracing—Bracing shall be not less than  $\frac{3}{4}$ " C.R. channel placed horizontally near mid-height of partition, tied to metal lath at 24" o.c. and with  $1\frac{1}{2}$ " angle braces placed vertically not over 6'-0" on centers. Wedge vertical braces at top and bottom and tie to  $\frac{3}{4}$ " horizontal channel to hold lath in vertical position.

*(Note to Architect: Where metal door bucks are used, they shall be furnished with inserts to which the metal lath can be wire-tied.)*

### S-10. USG Metal Base

Metal base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with splice plates. Base shall be securely held in place by clipping to base clips at:

(16" o.c. (TRUSSTEEL) (Channel) Studs)

(24" o.c. studless solid plaster partitions)

(12 to 16" o.c. masonry walls)

Base clips shall be secured by nailing to floor or masonry walls and by wire tying to metal studs.

### S-11. Metal Lath Resilient System

USG Metal Lath Resilient System, where shown on plans or otherwise indicated in this specification, shall be:

(a) Suspended ceiling grillage.  $\frac{3}{4}$ " channels shall be supported on USG clip No. 100, spaced ( $13\frac{1}{2}$ ") (16") o.c. along the  $1\frac{1}{2}$ " carrying channels.

# USG METAL LATH AND LATHING SPECIFICATIONS (Cont'd)

## SUPPLEMENTARY SPECIFICATIONS FOR SPECIFIC APPLICATIONS (Cont.)

(b) Wood stud and joist framing spaced not over 16" o.c. USG No. 200 clips shall be spaced 12" o.c. along joists and attached with 4d common nails. USG No. 200 clips shall be spaced not over 16" o.c. along the studs and attached with 4d common nails.  $\frac{1}{4}$ " pencil rods shall be wire-tied to inside of tongue on the clips and metal lath wire-tied to the pencil rods.

(c) TRUSSTEEL stud partitions. USG No. 400 clips shall be spaced not over 16" o.c. along stud and wire-tied with 18-gauge tie wire. A  $\frac{1}{4}$ " pencil rod shall be wire-tied to the notch on the outside flange of the clip.

(d) Masonry walls. USG No. 500 clips shall be spaced not over 18" o.c. vertically supporting  $\frac{3}{4}$ " furring channels not over 16" o.c. USG No. 500 clips shall be attached to (gypsum tile with 2" staples or 10d cut nails driven through hole in clip into solid section of tile) (brick or clay tile or masonry walls with 10d cut nails driven through hole in clip into the mortar joint). Channels shall be wired to the inside of the tongues of the clips with the webs of the channels away from the lath and metal lath wire-tied to the channels.

### S-12. TRUSSTEEL Stud Partitions

Unless otherwise specified, all interior non-load-bearing partitions shall be (2 $\frac{1}{2}$ " (3 $\frac{1}{4}$ " (4" (6" TRUSSTEEL Stud partitions. TRUSSTEEL Stud runner tracks shall be aligned accurately according to partition layout and securely attached to floor and ceiling construction. Studs shall be erected vertically not to exceed (16" o.c.) (19" o.c.) (24" o.c.) (depending on type and weight of lath used) secured to floor and ceiling runner track with attachment shoes, wire-tied around studs with a double strand of 18-gauge tie wire. Framing shall provide studs located approximately 2" from abutting partitions or wall constructions, at all openings and 2" from each side of all internal angles. Securely wire-tie door buck anchors to the adjacent studs. Metal lath shall be wire-tied to the studs 6" o. c.

### S-13. Beam Fireproofing

For beams and girders, framework shall be formed to contour in size shown on drawings, of  $\frac{3}{4}$ " channels as follows:

(a) Where  $\frac{3}{4}$ " channels are used for longitudinal furring, brackets shall be not more than 3'-0" apart.

(b) Where  $\frac{1}{4}$ " pencil rods are used, brackets shall not exceed 19" apart.

(c) Where longitudinal furring is not used, brackets shall not exceed 13 $\frac{1}{2}$ " on centers for 3.4 lb. diamond mesh metal lath, provided that at least one row of longitudinal channel shall be installed to hold work in proper shape.

Brackets shall be saddle tied to structural members with not less than four strands of No. 16 gauge wire. For tying longitudinal members to brackets, wire shall be not less than 16 gauge galvanized wire, and, for tying metal lath to rods or channels, wire shall not be less than 18-gauge galvanized wire.

Brackets shall be formed in accordance with details furnished by the architect. Brackets shall be securely wired, bolted or clamped to walls, ceilings, or structural members, as the case may require. For fastening brackets to various bases adequately strong anchorage shall be provided.

Metal lath shall be applied to the longitudinal channels or rods or direct to brackets and made to conform with the outline of the finished beam or cornice. Side laps shall not occur at the corners, but lath shall be carried around to the next members or corner strips shall be used at all corners.

### S-14. Column Fireproofing

Lathing for fireproofing of columns shall be done by (applying self-furring diamond mesh lath formed to neatly fit the column and wire tied not over 6" o.c. at all laps) (installing  $\frac{3}{4}$ " channel brackets and studs properly spaced to provide design lines shown or to enclose pipes and ducts, as required. Attach diamond mesh metal lath wire tying it to channels with 18-gauge tie wire spaced not over 6" o.c.). No. 1-A corner beads shall be wired tied to the metal lath so as to provide plaster thickness specified or shown.

## METAL LATH CENTERING

**Description.** A rigid  $\frac{3}{8}$ " or  $\frac{3}{4}$ " Rib Lath used as a form and reinforcing for short span concrete slabs over concrete or steel joists.

As a form, the metal lath is fabricated with closely spaced stiffening ribs running lengthwise of the sheet and does not depend on being stretched taut to carry the load of wet concrete.

As a reinforcing, metal lath is unsurpassed by any other material. Centering Lath has a herringbone mesh which permits the concrete to flow through and grip the steel, forming hundreds of keys per sq. ft. thus providing

exceptional bond to the lath, at the bottom of the slab where tension stresses are greatest.

Metal lath for centering is a low cost material that is inexpensively and quickly tied or clipped to the supporting members. Because of its rigidity there is very little sag between joists, requiring a minimum of temporary supports and less concrete.

The spacing of supports, the thickness of slab and the safe loads required will determine the type of Lath to be used. Consult tables below.

LOADING TABLES FOR 3/8" RIBLATH									
Thickness of Slab Above Mesh	Wt. of Concrete (Lbs. Per Sq. Ft.)	Wt. of Lath (Lbs. Per Sq. Yd.)	SAFE SUPERIMPOSED LOADS IN LBS. PER SQ. FT. (Based on WL/8 and 16,000 lbs. Fibre Stress in Steel)						
			SPAN IN INCHES						
			12	16	19	24			
2"	24	3.4	950	536	380	238			
		4.0	1090	613	433	271			
2½"	30	3.4	1200	675	479	300			
		4.0	1360	766	544	340			
3"	36	3.4	1450	815	578	362			
		4.0	1650	930	625	412			
LOADING TABLES FOR 3/4" RIBLATH									
Thickness of Slab Above Mesh	Wt. of Concrete (Lbs. Per Sq. Ft.)	Wt. of Slab† with ½" P. C. Plaster on Underside	Wt. of Lath (Lbs. Per Sq. Ft.)	Stress in Concrete (Lbs. Per Sq. In.)	Max. Span for Wet Concrete*	SAFE SUPERIMPOSED LOADS IN LBS. PER SQ. FT. (Based on WL/10 and 16,000 lbs. Fibre Stress in Steel)			
						SPAN IN FEET			
						3	4	5	6
2"	24	30	.60	600	3' 3"	325	170	98	59
			.75	690	3' 7"	438	233	138	87
2½"	30	36	.60	520	2' 11"	422	222	129	78
			.75	620	3' 3"		302	180	114
3"	36	42	.60	460	2" 8"	518	273	160	98
			.75	550	2' 11"		373	224	142
3½"	42	48	.60	420	2' 5"		325	190	117
			.75	490	2' 9"		442	267	170
4"	48	54	.60	390	2' 3"		378	222	138
			.75	460	2' 6"		514	310	198

## SPECIFICATIONS

Metal lath for concrete slabs over steel beams shall be USG [ $\frac{3}{8}$ " (3.4 lb.) (4.0 lb.)] [ $\frac{3}{4}$ " (.60 lb.) (.75 lb.)] Rib Lath as supplied by United States Gypsum Co.

Rib lath sheets shall be placed over and across the steel supports with the ribs upward. Edge ribs of adjacent sheets shall be nested and wire tied at supports and at least once between supports. End laps occurring over

supports shall be lapped not less than 1½" beyond center of support. When end laps occur between supports, lap shall be not less than 4" with ribs interlocking and wire tied in at least two places on each rib with at least 18 ga. tie wire.

Centering lath shall be attached to joists with special wire attachment clips or tie wire.

# USG ALUMINUM LOUVERS

## Description.

USG Louvers are made of rust-proof "Life Time" Aluminum in a complete range of types and sizes. The improved design provides greater weather protection, positive and maximum ventilation, and easy installation. Aluminum nails furnished with most models. 8 mesh non-rusting screen furnished unless 16 mesh is ordered.

## Where Used and Why.

USG Aluminum Louvers are a necessity in every insulated home. At least two per house are required. Attic ventilation is essential to overcome two major problems—condensation in winter, and attic heat in summer. Unexcavated areas also require ventilation to prevent condensation.

## Types and Uses.

**Rectangular Louvers** are designed to be self-casing or flush type for installation in vertical exterior attic walls.

**USG Multi-Pitch\* Louvers** are designed to fit any pitch from 5-12 to 12-12 by a unique adjustable feature which keeps the openings

equally spaced regardless of pitch, providing more free area than any other type of adjustable louver. For use with gable roofs.

**Pitched Roof Louver** for installation in hip roofs. Designed for maximum ventilation and storm protection. Embossed aluminum finish.

**Cu-Po-Vent\* Cupola Louver** is architecturally designed to serve both a decorative and functional use in today's modern house. Roof section is coated with a compound to give sound-deadening qualities. Three models—No. 3 for pitched roofs, and No. 7 for curb, or flat roof construction, and No. 5 for either flat or pitch roofs. Sturdy cast aluminum weathervanes are available in four handsome models, No. 1—Rooster, No. 2 Boxer dog, No. 3 flying duck and No. 4 Country Doctor.

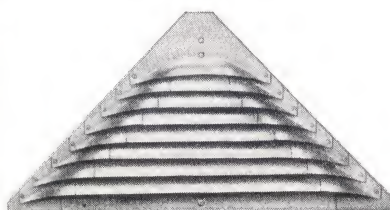
**Foundation Louvers.** Masonry type for ventilating crawl spaces. Sized to match concrete block.

**Exterior Air Vents** for use as cornice vents under eaves and for ventilation of unexcavated areas with frame construction.

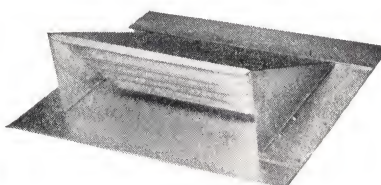
**Interior Air Vents** for installation in walls or doors where air flow is required. (No screen furnished)



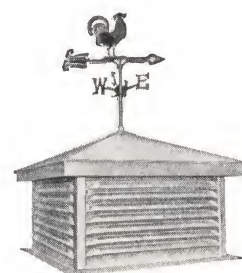
Rectangular Louvers



Multi-Pitch Louvers



Pitched Roof Louvers



Cu-Po-Vent Louvers

## TECHNICAL DATA

Type	Size Width & Height	Opening Size	Net Free Area
RECTANGULAR	8"x8"	8½"x8½"	29.6 sq. in.
	8"x12"	8½"x12½"	44.4 sq. in.
	8"x16"	8½"x16½"	60 sq. in.
	12"x12"	12½"x12½"	75 sq. in.
	12"x18"	12½"x18½"	112 sq. in.
	12"x24"	12½"x24½"	150 sq. in.
	14"x24"	14½"x24½"	172 sq. in.
	24"x30"	24¾"x30¾"	380 sq. in.
	30"x12"	30¾"x12¾"	170 sq. in.
	30"x18"	30¾"x18¾"	255 sq. in.
	30"x24"	30¾"x24¾"	340 sq. in.
	30"x28"	30¾"x28¾"	396 sq. in.
Pitched Roof	— — —	12¾"x 6¾"	37.5 sq. in.
Foundation (Masonry)	15½"x7½"	15½"x 7½"	45 sq. in.
Exterior Air Vents (Cornice, Eaves, Crawl Spaces, Wood Frame Construction)	16"x5½"	14½"x 4"	24 sq. in.
	16"x 9"	14½"x 7"	45 sq. in.

MULTI-PITCH ADJUSTABLE GABLE LOUVER		
No.	Pitch	Net Free Area
58	5-12	160 sq. in.
	8-12	120 sq. in.
58 Jr.	5-12	108 sq. in.
	8-12	81 sq. in.
712	7-12	144 sq. in.
	12-12	100 sq. in.
712 Jr.	7-12	82 sq. in.
	12-12	59 sq. in.

SECTIONAL TRIANGULAR LOUVERS		
Base Dimension	Pitch	Net Free Area
10'	3-12	344 sq. in.
10'	4-12	444 sq. in.
8'	5-12	408 sq. in.
8'	6-12	475 sq. in.

CU-PO-VENT—CUPOLA LOUVERS		
No.	Type	Net Free Area**
3	CU-PO-VENT	567 sq. in.
7	CU-PO-VENT	794 sq. in.
5	CU-PO-VENT	215 sq. in.

Type	Overall Size	Opening Size	Net Free Area
Interior Air Vents	11"x5½"	9½"x4"	16 sq. in.
	16"x5½"	14½"x4"	24 sq. in.
	16"x9"	14½"x7"	45 sq. in.

## WHAT SIZE LOUVER?

Provide ½ sq. in. free ventilation area for each 1 sq. ft. of attic area for best condensation control. Louvers should be installed to provide cross ventilation.

## FREE AREA

The ventilating areas shown are not gross, but net, as required by F.H.A. All restrictions have been allowed for.

\*T. M. of Home Comfort Manufacturing Co. Reg. U. S. Pat. Off.

TECHNICAL INFORMATION

ROCKLATH\*

**PLASTER BASES  
ATTACHMENT SYSTEMS  
PARTITION CONSTRUCTIONS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

## ROCKLATH\* PLASTER BASES

### DESCRIPTION

ROCKLATH plaster base is a gypsum lath made in sheet form providing a rigid base for the economical application of gypsum plasters. It is composed of a special gypsum core, faced on the sides and long edges with paper specifically manufactured for this purpose.

**Complies with:** ASTM Designation C37-50 and Fed. Spec. SS-P-431a

### FUNCTION AND UTILITY

**Fireproof**—When used with gypsum plasters ROCKLATH plaster bases provide fire ratings as shown in the technical data tables.

**Strength**—Gypsum plaster adheres to ROCKLATH with a strong bond. A pull of 864 lbs. per sq. ft. is required to separate the plaster from the lath, providing a safety factor of 144. The large sheets when plastered add appreciable distortion resistance to the frame.

**Durability**—Gypsum is a mineral not affected by time, decay, dry rot or normal humidity conditions. Does not attract vermin.

**Economy**—ROCKLATH is low in cost, has general market acceptance, is quickly and easily applied and permits substantial savings in plastering materials and labor.

**Resistance to Sound Transmission**—ROCKLATH and plaster used in conjunction with partition assemblies and USG\* attachment systems provide substantial resistance to sound transmission. (See Technical Data)

### LIMITATIONS OF USE

1. Not recommended for use as a plaster base for portland cement or lime plasters.
2.  $\frac{3}{8}$ " ROCKLATH is designed for supports not to exceed 16" on centers. For spacings greater than 16" and not more than 24",  $\frac{1}{2}$ " ROCKLATH should be used.
3. Where  $\frac{3}{8}$ " ROCKLATH is used in conjunction with resilient clips (supported at long edges only) or where  $\frac{1}{2}$ " ROCKLATH is used on supports exceeding 16 inches o.c., three coat plaster application is recommended to eliminate the possibility of sagging during plastering.
4. Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with good engineering practice.
5. ROCKLATH plaster base should not be used where exposed to excessive moisture or humidity.
6. Fire Ratings shown in Technical Data Tables apply only for types, thickness and combinations listed.

## ROCKLATH PLASTER BASES—TYPES

### PLAIN ROCKLATH

Recommended for nail-on application to wood and nailable steel framing and for clip attachment to wood framing, steel studs and suspended metal grillage.

Size: 16 x 48 inches,  $\frac{3}{8}$  or  $\frac{1}{2}$  inch thick.

(Also made 16 $\frac{1}{2}$  inches wide for Pacific Coast area)

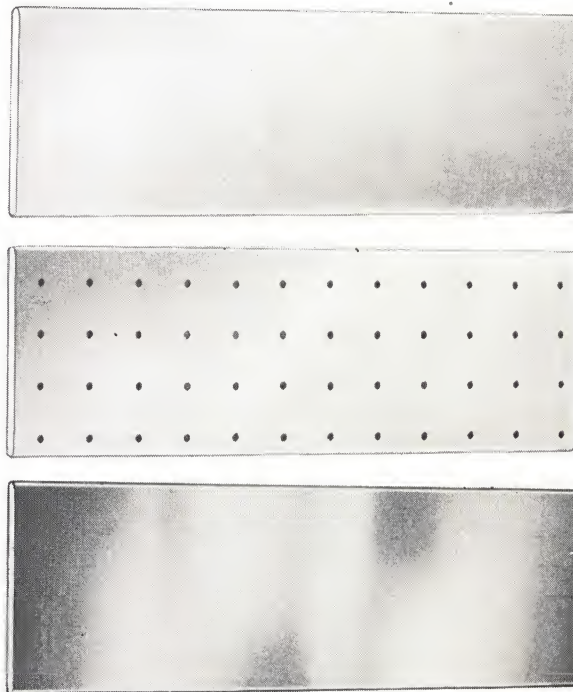
### PERFORATED ROCKLATH

Perforated ROCKLATH is identical in all respects with plain ROCKLATH except  $\frac{3}{4}$  inch round holes are punched through the lath 4 inches on center in each direction, one  $\frac{3}{4}$  inch diameter hole for each 16 sq. in. of lath area. This provides, in addition to the natural plaster bond, a mechanical key. Higher fire ratings are obtained by the use of perforated ROCKLATH and gypsum plaster. (See Technical Data Tables, page 13.)

Perforated ROCKLATH is not recommended for attachment to ceilings, either wood framing or metal grillage, where the only support provided is by clips at edges.

### INSULATING ROCKLATH

Insulating ROCKLATH provides all the advantages of plain ROCKLATH as a rigid plaster base, and is manufactured in the same sizes. Bright aluminum foil is laminated to the back of plain ROCKLATH providing an effective vapor barrier at no additional labor cost.



"RED TOP," "BRIDJOINT," "PYROBAR," "ROCKLATH," "USG," "TRUSSTEEL," "STRUCTOLITE," are registered trademarks; "BRACE-TITE" is a trademark owned by United States Gypsum and is used by it to distinguish its products. "RED TOP" identifies the particular plasters and finishes; "BRIDJOINT" identifies the particular lathing system; "PYROBAR" identifies the particular gypsum partition tile; "ROCKLATH" identifies the particular gypsum lath or plaster base; "TRUSSTEEL" identifies the particular truss designed stud; "STRUCTOLITE" identifies a particular plaster; "BRACE-TITE" identifies the particular lathing system; all manufactured by United States Gypsum.

## ROCKLATH PLASTER BASES—CONT.

### INSULATING ROCKLATH—CONT.

**Insulation**—When properly installed with at least a  $\frac{3}{4}$  inch air space next to the foil, insulating ROCKLATH provides positive insulation having a resistance of 2.59. When used on horizontal surfaces, for retarding the downward flow of heat, its insulating value is about three times greater. (See Thermal Resistance Chart.) Repeated tests and field observations over an extended number of years show that, in normal use, there has been insufficient corrosion of the foil to harm the insulating and vapor barrier characteristics of insulating ROCKLATH. Tests also prove that the effect of dust on insulating ROCKLATH in a vertical position is negligible, and that a greater than normal dust deposit accumulation on insulating ROCKLATH in a horizontal position is required to seriously affect its insulating characteristics.

THEMAL RESISTANCE (R) OF INSULATING ROCKLATH  
( $\frac{1}{2}$ " OF PLASTER AND FACING AIR SPACE  $\frac{3}{4}$ " OR MORE)  
ALL FIGURES BASED ON ASHVE GUIDE

Direction of Heat Flow	Thickness Insulating ROCKLATH	
	$\frac{3}{8}$ "	$\frac{1}{2}$ "
Downward—Coefficients for ceiling and sloping surfaces—summer conditions.	6.93	7.01
Upward—Coefficients for ceiling and sloping surfaces—winter conditions.	2.59	2.67
Horizontal—These coefficients for walls under summer or winter conditions.	2.59	2.67

**Economy**—Costs for application of insulating ROCKLATH plaster base are no more than for plain or perforated ROCKLATH. Material costs average approximately  $1\frac{1}{2}$  cents per square foot more than plain or perforated ROCKLATH.

### LONG LENGTH ROCKLATH PLASTER BASE

Long Length ROCKLATH is manufactured  $\frac{1}{2}$ " thick, 24" wide, mill cut to ceiling high lengths as required up to 12 feet, and is formed with longitudinal "V" edges.

It is designed primarily for use as a plaster base in 2" solid ROCKLATH and plaster partitions. (See 2" Solid ROCKLATH and Plaster Partition Section for Details.)

### LONG LENGTH INSULATING ROCKLATH

Long Length Insulating ROCKLATH is manufactured  $\frac{3}{8}$ " thick, 24" wide with square edges, and mill cut to ceiling high lengths, as required, with bright aluminum foil laminated to the back side.

Designed primarily for furring exterior masonry wall construction. (See Section on USG Exterior Wall Furring System.)



## ROCKLATH ACCESSORIES

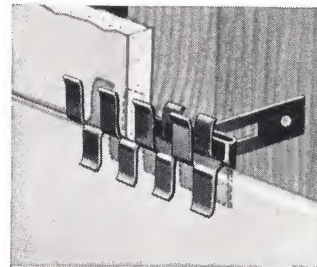
### USG RESILIENT CLIPS

USG Resilient Clips are specially formed to provide a non-rigid or floating attachment of  $\frac{3}{8}$ " ROCKLATH plaster bases to the structural frame, affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss through the resilient attachment.

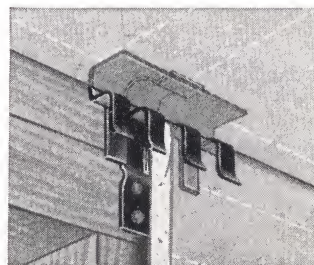
#### Resilient Clip R-1

For wood studs or joists spaced 16" o.c. attached by nailing with 13 gauge,  $1\frac{1}{8}$ " lathing nail. ROCKLATH is floated  $\frac{3}{8}$ " free of framing members and held in place by the prongs of the clip.



#### Resilient Clip R-2

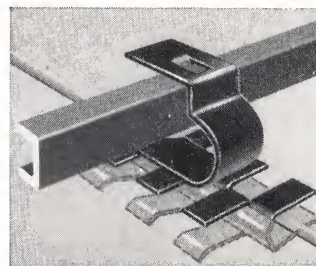
For corners and angles of wood frame construction. Used in conjunction with the R-1 Clips.



## ROCKLATH ACCESSORIES—CONT.

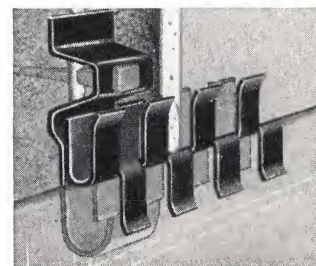
### Resilient Clip R-3

For suspended ceilings, resilient attachment of  $\frac{3}{8}$ " ROCKLATH to  $\frac{3}{4}$ " cold rolled furring channels. ROCKLATH is held  $\frac{1}{2}$ " away from direct contact with the channel.



### Resilient Clip R-5

For masonry walls. Nailed in place over Pyrobar, lightweight concrete units or clay tile, using 2" staple or 10d cut nails driven into the solid sections of the units or by using toggle bolts in hollow sections of the unit. Spaced 16" o.c. vertically and horizontally. ROCKLATH is resiliently furred out  $\frac{7}{8}$ " from the face of the masonry.

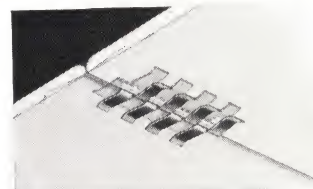


### BRIDJOINT\* Clips

Specially formed steel clips designed to provide a rigid alignment of gypsum lath where ends of lath do not fall at or on structural members.

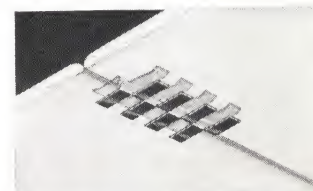
#### BRIDJOINT Clip B-1

Field clip for  $\frac{3}{8}$ " ROCKLATH to support end joints of lath. Also manufactured for use with  $\frac{1}{2}$ " ROCKLATH.



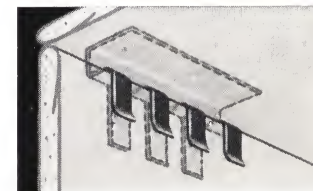
#### BRIDJOINT Clip B-1A

Field clip for  $\frac{3}{8}$ " ROCKLATH to support end joints where acoustical tile is to be adhesively applied to the face of the lath. Tile side of clip has flat prongs.



#### BRIDJOINT Clip B-2

Used in conjunction with B-1 clips to eliminate nailing in corners and angles. For  $\frac{3}{8}$ " ROCKLATH only.



### BRACE-TITE\* Clips

Special wire clips for attaching ROCKLATH plaster base to metal grillages of  $\frac{3}{4}$ " cold rolled channels or TRUSSTEEL\* Studs when spaced not over 16" o.c.

#### BRACE-TITE Field Clip BT-1

Used for suspended ceilings, exterior wall and beam furring and hollow pipe chase partitions. Designed to provide support across the full width of the lath and has spring action to increase rigidity.



#### BRACE-TITE Starter Clip BT-1

Used in conjunction with BT-1 field clip to start first course of lath.



\*T. M. Reg. U. S. Pat. Off.

## ROCKLATH ACCESSORIES—CONT.

### BRACE-TITE Acoustical Clip BT-A

Used for suspended ceilings with adhesive attachment of acoustical tile. Designed to provide support across the full width of the lath and not interfere with alignment of the tile.



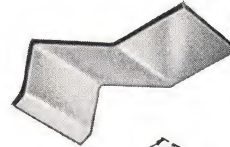
### TRUS-LOK Field Clip TL-1

For attaching ROCKLATH plaster base to TRUSSTEEL Studs.



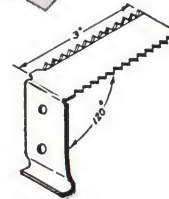
### TRUS-LOK Starter-Finisher Clip TL-2

Used in conjunction with TL-1 clips to start first course of lath.



### ADJUSTABLE WALL FURRING BRACKET

Made of 20 gauge galvanized steel with serrated edges for attaching  $\frac{3}{4}$ " furring channels to exterior masonry walls.



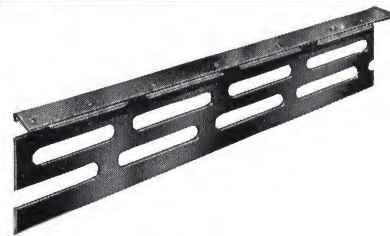
### USG 2" PARTITION TERMINAL

A Partition Terminal for use as a partition cap and plaster ground or to form arched openings in 2" solid plaster partitions with either metal lath or ROCKLATH Plaster Base. Cap is formed of 18-gauge steel, welded to 24-gauge punched runner—assembly prime coated. Standard length 8'2".



### USG "L" SHAPED CEILING RUNNER

24 gauge black painted, sheet metal angle, for aligning and securing long length ROCKLATH to ceiling construction.



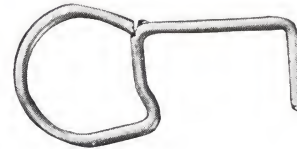
### CEILING RUNNER CLIPS

Used for attaching  $\frac{1}{2}$ " long length ROCKLATH to "L" shaped ceiling runner.



### USG BRACING CLIP

For attaching  $\frac{3}{4}$ " channels to  $\frac{1}{2}$ " long length ROCKLATH as temporary braces in 2" solid ROCKLATH and plaster partition construction.



### USG METAL BASE & CLIPS (See AIA File No. 20-B).

### USG TRUSSTEEL\* STUDS (See page 7 AIA File No. 20 B).

### CORNER BEAD, CORNERITE, METAL CASINGS, STRIPLATH, ETC.

(See AIA File No. 20-B covering USG Metal Lath and Accessories).

## ROCKLATH RESILIENT LATHING SYSTEM

### DESCRIPTION

Resilient Lathing System is a method for the attachment of ROCKLATH plaster base, floating it free from the basic wall or ceiling framing by means of resilient spring clips.

### FUNCTION AND UTILITY

**Excellent Resistance to Sound Transmission**—Test No. 420, National Bureau of Standards gave a sound transmission loss rating of 52.2 decibels for a wood stud partition with R-1 resilient clips, gypsum lath and sand aggregate plaster both sides.

**Maximum Crack Resistance**—Spring clips permit limited movement of framing members, their resilience reducing the strain on the plaster coat.

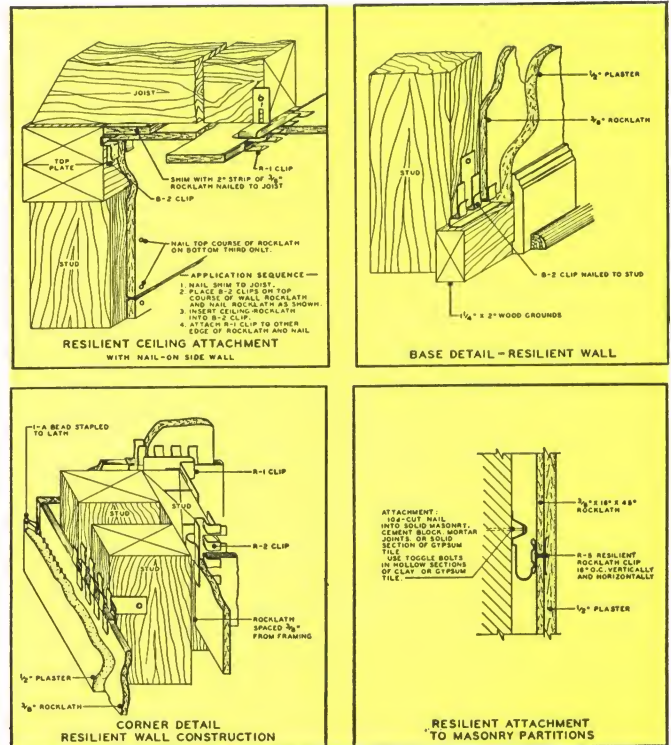
**Fireproof**—Tests at a nationally recognized fire testing laboratory (name on request) gave a one hour fire resistance time to a wood stud partition (load bearing) with perforated ROCKLATH attached with R-1 Resilient Clips each side and plastered to  $\frac{1}{2}$ " grounds over the lath with gypsum-perlite 100:2 $\frac{1}{2}$ , 100:2 $\frac{1}{2}$ . When plastered to  $\frac{1}{2}$ " grounds over the lath with gypsum-sand 1:2, 1:2, fire resistance period was 58 $\frac{1}{2}$  minutes.

**Flexible**—May be applied to wood, steel or masonry construction.

**Cost**—The increase in cost is only nominal and represents principally the additional cost of clips over nail-on system of application.

### LIMITATIONS OF USE

1. The same as for plain ROCKLATH plaster base.
2. Use either plain or perforated ROCKLATH for side wall construction.
3. Perforated ROCKLATH should not be used on ceilings with resilient ROCKLATH clips. Use plain ROCKLATH plaster base with a full scratch coat, raked and *allowed to set*, followed by a brown coat to a total uniform thickness of not less than  $\frac{7}{16}$ " over the lath.



## BRIDJOINT LATHING SYSTEM

### DESCRIPTION

The BRIDJOINT Lathing System is a clip application of ROCKLATH plaster base on walls and ceilings so designed that the ends (16" dimension) of the lath fall between (not on) framing members.

Types B-1 and B-2 clips for  $\frac{3}{8}$ " ROCKLATH.

B-1 for  $\frac{1}{2}$ " ROCKLATH.

### FUNCTION AND UTILITY

**Resistance to Cracking**—Removal of gypsum lath ends from framing members increases resistance to cracking at these vulnerable points.

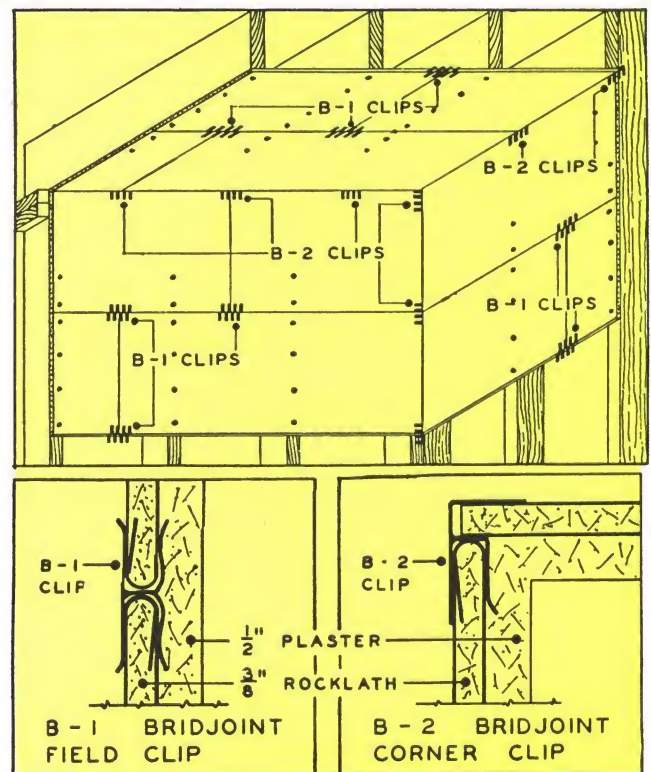
**Framing Members** need not be exactly 16" on centers, as the ends of the lath may occur at random except at corners.

**Adaptable Over Nailable Steel Framing**—Nails of not less than  $\frac{3}{8}$ " head shall be used and must be of sufficient length to extend beyond the nail retention curve of the member, or they shall be of special design to lock in member as recommended by manufacturers of the framing.

**Cost**—Twenty-five per cent less nailing of the lath is required. Cornerite and nailing are eliminated in corners, making for speed and economy. This results in only a slight increase over the cost of nail-on construction.

### LIMITATIONS OF USE

Same as for plain ROCKLATH, see page 2.



Details of BRIDJOINT Lathing System

## BRACE-TITE\* LATHING SYSTEM

### DESCRIPTION

The BRACE-TITE Lathing System is a mechanical suspension of ROCKLATH plaster base to standard metal grillage ( $\frac{3}{4}$ " cold rolled channels not over 16" o.c.).

### FUNCTION AND UTILITY

**Rigidity Similar To Nail-On.** The field clips, spaced 16 inches o.c., support the ROCKLATH across the full width of the board. The spring action of the field clip increases rigidity.

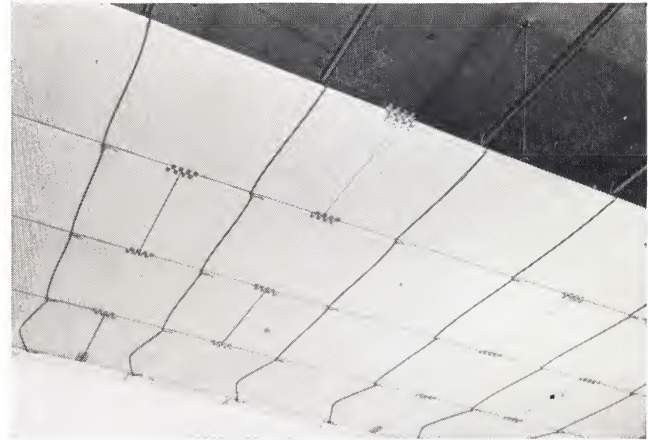
**Fireproof.** Under bar joist construction with 2" concrete floors above, fire ratings of 1-hour, 2-hours, 3-hours and 4-hours are attainable. (See Technical Data page 14.)

**Easy To Apply.** The loop of the BRACE-TITE field clip is hooked over the channel and hooked into the eye of the preceding clip.

**Vapor Permeability.** With Insulating ROCKLATH, tests at a nationally recognized laboratory gave a vapor permeability of 0.79 perms (See page 13).

**Rapid Erection.** Only three clips are required for each sheet of ROCKLATH plaster base plus two USG BRIDJOINT\* B-1 clips at the end joint.

**No Special Materials.** Standard  $\frac{3}{4}$ " cold rolled channels may be used on conventional 16-inch or 12-inch spacing. Plain, Perforated or Insulating ROCKLATH plaster base may be used.



**Reinforces Plaster.** The wire clip embedded in the plaster provides increased strength in the lath and plaster assembly.

**Cost.** As the BRACE-TITE system requires only two coat plaster work, its use results in economy of application.

**Acoustical Tile.** A special field clip (BT-A) and BRIDJOINT B-1A are available for use where acoustical tile is to be cemented direct to the gypsum lath.

## TRUSSTEEL\* STUD ROCKLATH PARTITION

**DESCRIPTION**—A non-load-bearing partition of TRUSSTEEL Studs, ROCKLATH Plaster Base with TRUS-LOK Clip attachment, and plaster. Over-all thicknesses:  $4\frac{1}{2}$ ",  $5\frac{1}{4}$ ", 6", and 8", depending on stud width.

**FLEXIBLE**—The open web design of the TRUSSTEEL Stud allows encasement of small pipes, conduits, heat controls, and small ducts horizontally and vertically without weakening the partition structurally by chasing. Web members are easily cut for larger pipes or ducts.

**VERSATILE**— $2\frac{1}{2}$ ",  $3\frac{1}{4}$ ", 4", and 6" TRUSSTEEL Studs provide wall thicknesses to meet job requirements.

**STRONG**—Strength of studs is derived from strategic use of metal in a truss design—not from bulk weight. The partition assembly of TRUSSTEEL Studs, ROCKLATH plaster base, and plaster has more than adequate strength for building construction practices and is nationally accepted by building code authorities.

**LIGHTWEIGHT**—This partition assembly weighs approximately 10 lbs. per square foot when plastered with perlite aggregate plaster, and approximately 15 lbs. per square foot with sand aggregate plaster, in any TRUSSTEEL Stud width.

**FIRE RESISTANT**—Built of incombustible materials. One hour fire rating is obtained when perforated ROCKLATH plaster-base is used and plastered with gypsum-sand plaster 1:1, 1:2, or with STRUCTO-LITE plaster or gypsum perlite 100:2 $\frac{1}{2}$ .

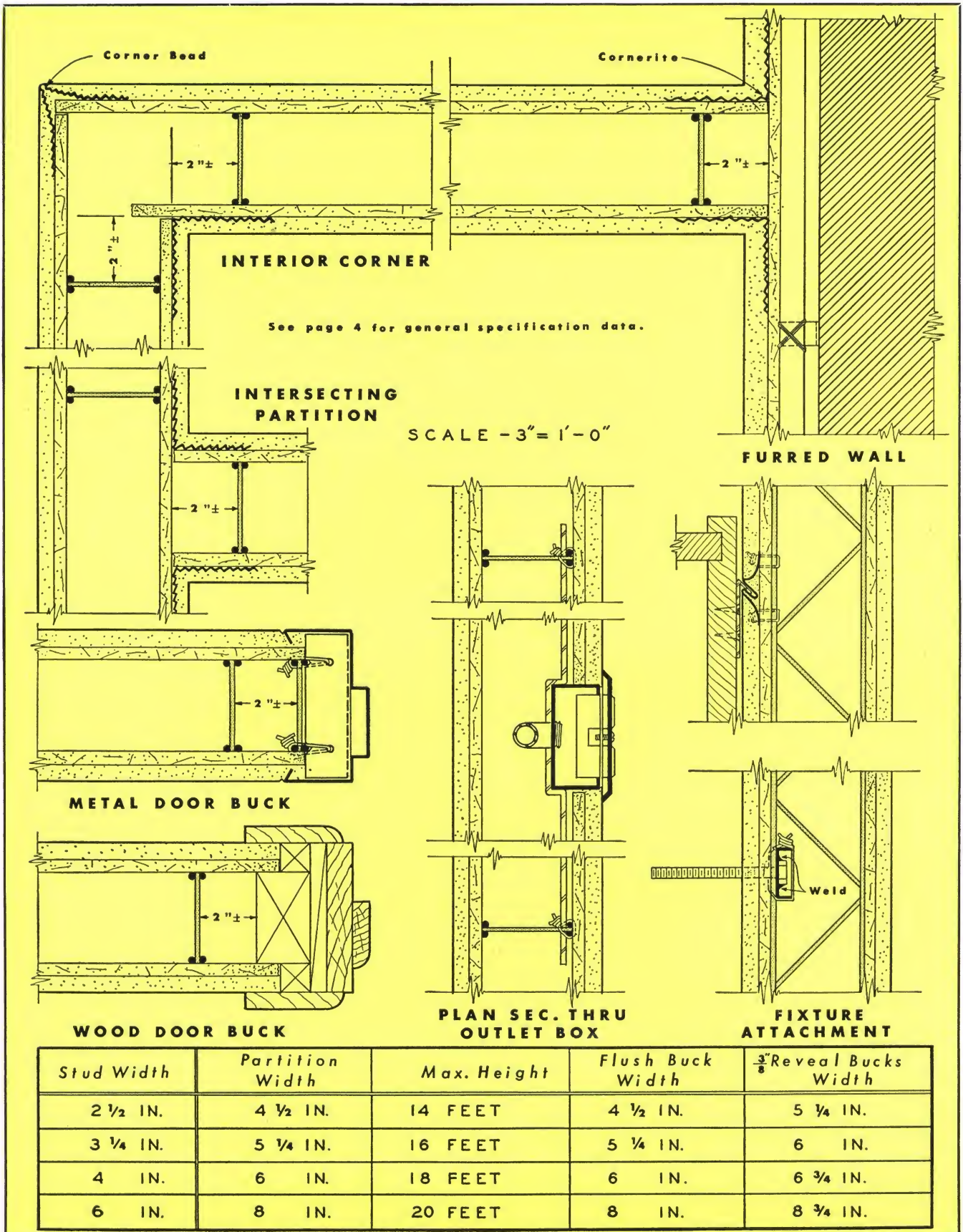
**SOUND REDUCTION**—This partition assembly has good resistance to sound transmission, attaining average sound transmission loss ratings of 48 decibels with sand aggregate plaster, and 44 decibels with perlite aggregate plaster, in tests at a nationally recognized laboratory.

**ECONOMICAL**—Material costs are low, job erection fast—provides installation economies for mechanical trades.

\*T. M. Reg. U. S. Pat. Off.

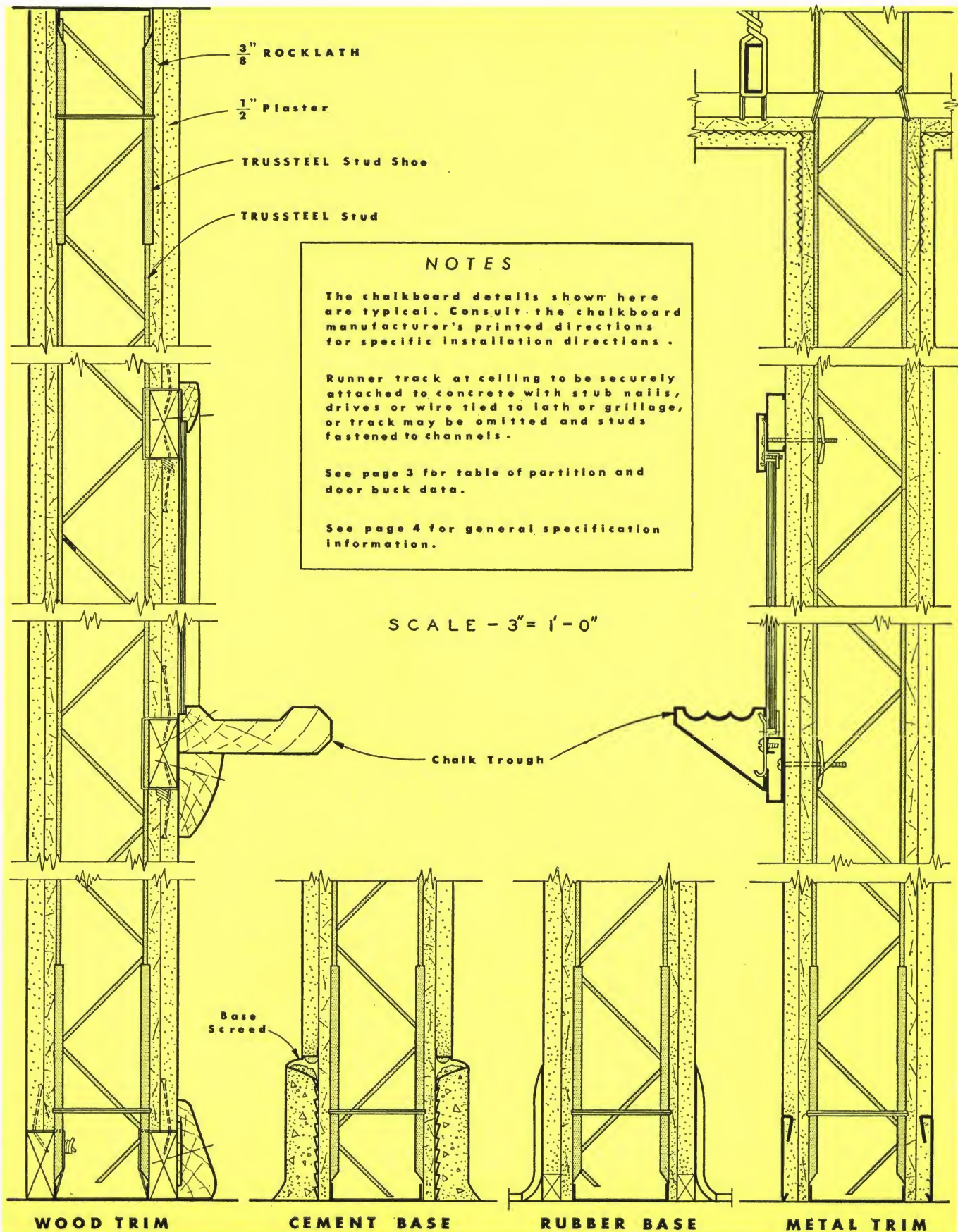
# TRUSSTEEL STUD-ROCKLATH PARTITIONS—Cont.

## Outlet Box, Fixture Attachments and Door Bucks



## TRUSSTEEL STUD-ROCKLATH PARTITION—Cont.

### Ceiling Attachment, Chalkboard and Base Details



## ROCKLATH AND PLASTER COLUMN FIREPROOFING

### DESCRIPTION

ROCKLATH plaster base is wired in place against the structural steel column and plastered with gypsum cement plaster and sand or perlite aggregate in proportions and thickness required to give fire rating desired. In four hour ratings, 20 gauge galvanized 1" hexagonal mesh wire fabric is used in addition to the ROCKLATH.

### FUNCTION AND UTILITY

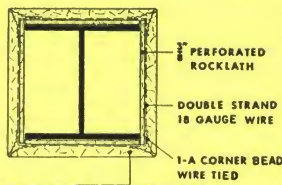
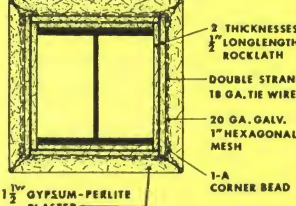
**Fireproof**—Gypsum is incombustible and will not communicate high temperatures until completely calcined, a very slow process. Details for column fire ratings of 1, 1½, 2, 3 and 4 hours are given below.

**Light Weight**—ROCKLATH and plaster fireproofing of structural steel columns weighs from 6 pounds for 1 hour protection to 11 pounds for 4 hour protection per square foot of completed surface area.

**Low In Cost**—Use of standard lathing and plastering materials, combined with easy attachment of lath and the obvious economy of plastering over gypsum lath, provides low cost column fireproofing.

### LIMITATIONS OF USE

1. Steel corner angles, 2" x 2", 4' high, similar to those required for other column fire protection are required for warehouse or storage space columns.

RATINGS VARY WITH PLASTER THICKNESS AND AGGREGATE RATIO							
RATING	THICKNESS	AGGREGATE	RATIO				
1 HR.	1/2"	SAND	1:2 1/2	<b>1, 1½, 2 &amp; 3 HOURS</b> PLASTER & THICKNESS VARIES (SEE TABLE)		<b>4 HOUR</b> 1/2" GYPSUM-PERLITE PLASTER	
1 1/2 HR.	5/8"	SAND	1:2 1/2				
2 HR.	1"	PERLITE	100:2 1/2				
3 HR.	1 3/4"	PERLITE	100:2 100:3				
4 HR.	1 1/2"	PERLITE	100:2 100:3				

## 2" SOLID ROCKLATH AND PLASTER PARTITION

### DESCRIPTION

The 2" Solid ROCKLATH and Plaster Partition is a studless, non-loadbearing partition consisting of long length ROCKLATH plaster base, held vertically in floor and ceiling runners, and plastered on both sides.

**Size of ROCKLATH**—½" thick, 24" wide by ceiling-high lengths with longitudinal "V" edges.

### FUNCTION AND UTILITY

**Fireproof**—Composed essentially of gypsum, the partition is incombustible and will not transmit temperatures greatly in excess of 212° until completely calcined—a slow process. See Technical Data for one hour fire rating.

**Lightweight**—Only 16 lbs. per sq. ft. of finished partition.

**Space Saving**—Saves 40 to 60 per cent of space occupied by conventional partitions. In every five lineal feet, a 2" partition

creates one extra square foot of usable space over a 4½" partition.

**Lateral Strength**—The records of an official impact test show that a 60-lb. weight, traveling through a 4-foot fall, failed to produce a discernible crack on a full sized partition after three successive impacts.

**Cost**—Without consideration to space saving, the actual cost is comparable and competitive with conventional wood or metal studs with ROCKLATH plaster base and plaster, both sides.

Complies with FHA requirements for rental housing.

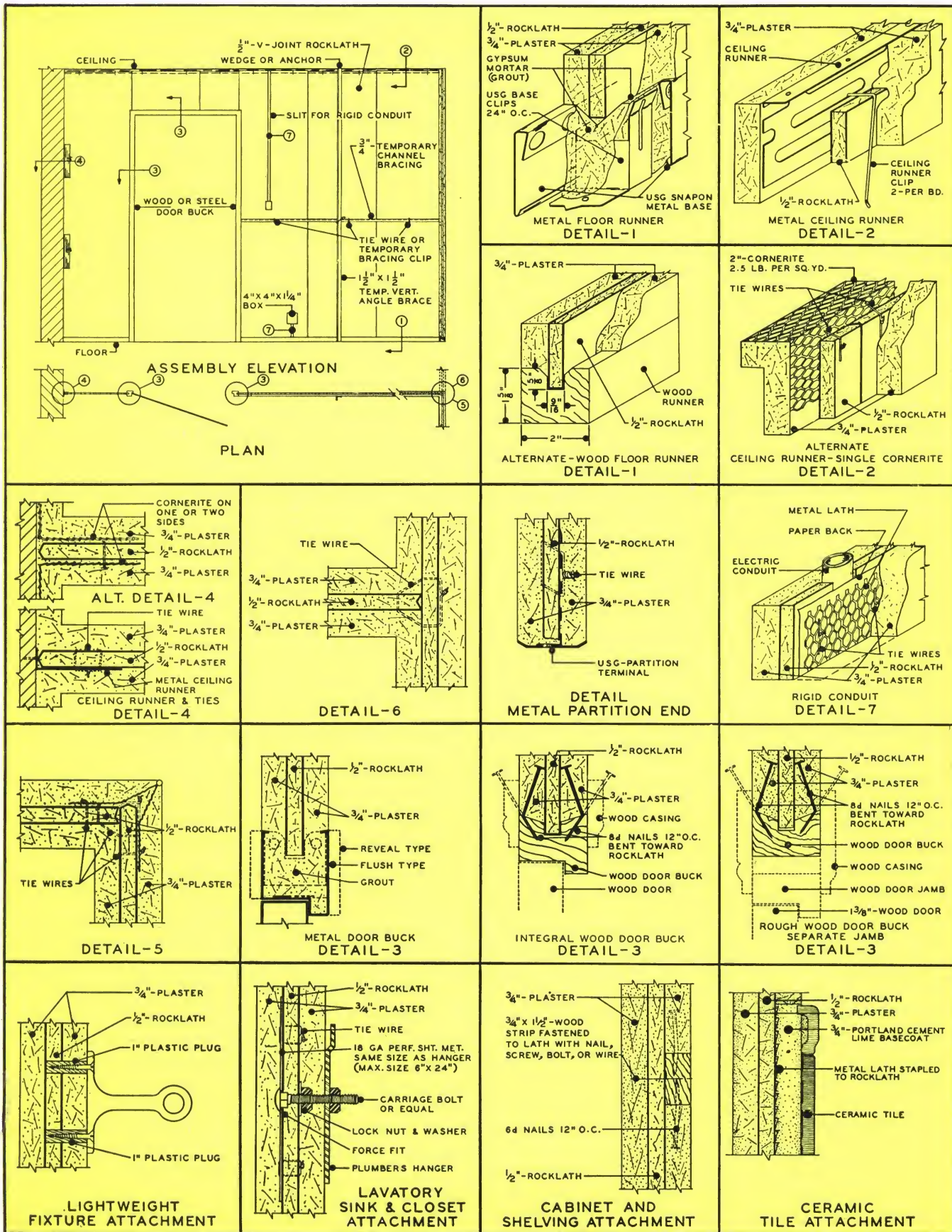
### LIMITATIONS OF USE

1. For non-bearing partitions only.
2. Limiting height twelve feet.
3. For 1 hour fire rating, RED TOP\* plaster sanded 1:1, 1:2, STRUCTO-LITE\* or gypsum-perlite 100:2, 100:3 must be used.

TECHNICAL DATA				
(All tests made by nationally recognized testing laboratories, except as noted)				
Construction	Limiting Height	Weight Per Square Foot	Fire Rating	Sound Transmission Loss
½" Long-length V-edge ROCKLATH plastered both sides with ¾" RED TOP Plaster, sanded 1:1, 1:2	12 Ft.	16 lbs.	1 Hr.	
Same, but gypsum-sand 1:2, 1:3	12 Ft.	16 lbs.	45 Min.	37.3
Same, but gypsum-perlite 100:2, 100:3	12 Ft.	9 lbs.	1½ Hr.	36.8

(See page 11 for details)

## 2" SOLID ROCKLATH AND PLASTER PARTITION



## EXTERIOR WALL FURRING SYSTEM

### DESCRIPTION

The Exterior Wall Furring System is a method of attaching  $\frac{3}{4}$ " channels and long length Insulating ROCKLATH plaster base to exterior walls using USG Adjustable Wall Furring Brackets.

### FUNCTION AND UTILITY

**Furrs and Aligns Exterior Wall**—Attachment of  $\frac{3}{4}$ " channels and Long Length Insulating ROCKLATH to exterior masonry walls using USG Adjustable Wall Furring Brackets furrs and aligns wall, providing proper air space and a uniformly even plaster base.

**Sturdy—Rust Resistant—Easily Attached**—USG Adjustable Wall Furring Brackets are made from 20 gauge tight coat galvanized steel. Easily attached to masonry

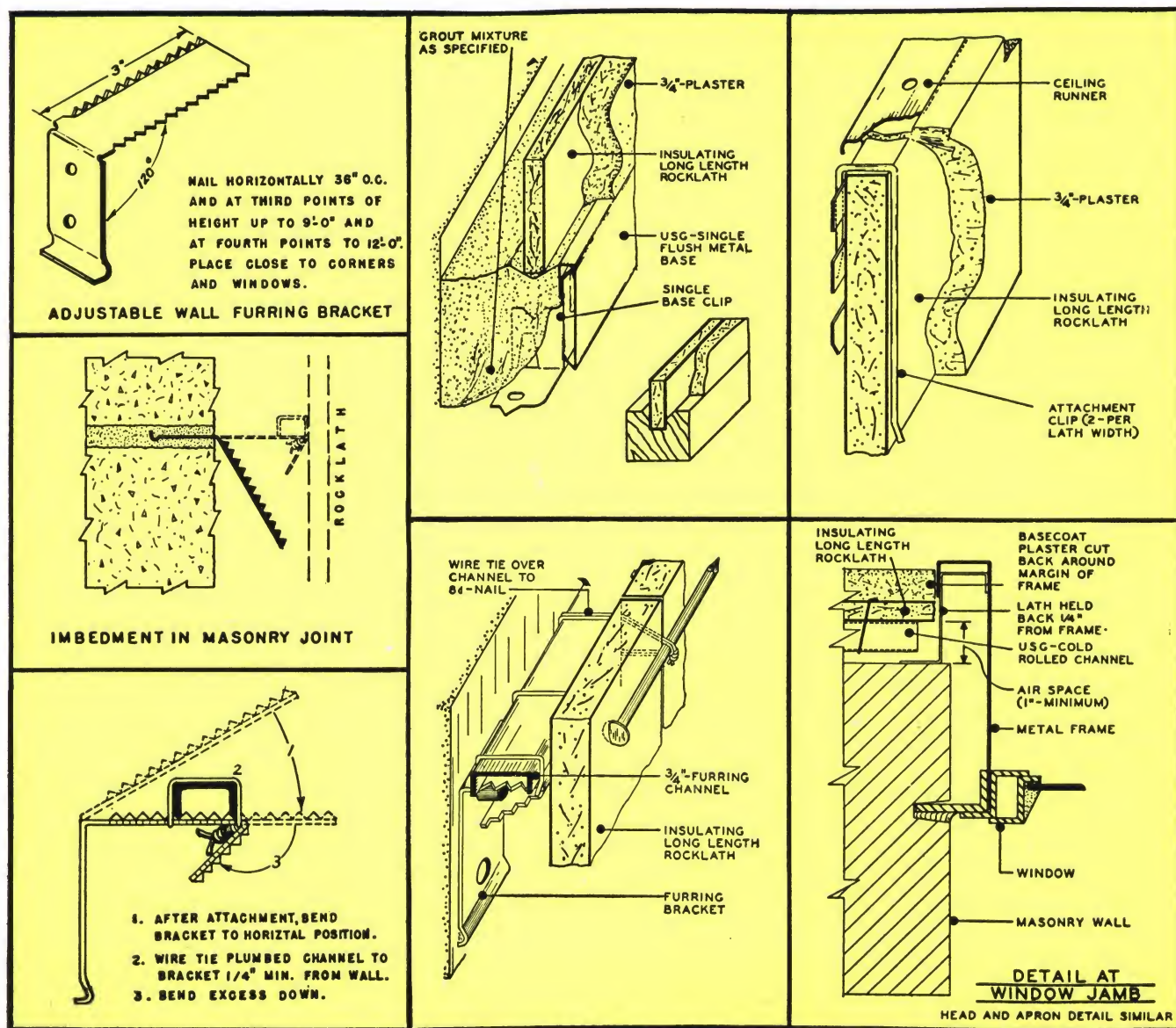
walls using  $\frac{5}{8}$ " stub nails for concrete and 2" cut nails for masonry, or can be laid in mortar joints.

**Insulation**—The use of long length Insulating ROCKLATH provides insulation equivalent to  $\frac{1}{2}$ " fiber insulating board. (See Insulating ROCKLATH plaster base, pages 2 and 3.)

**Vapor Barrier**—Insulating ROCKLATH plaster base is an effective safeguard against harmful condensation.

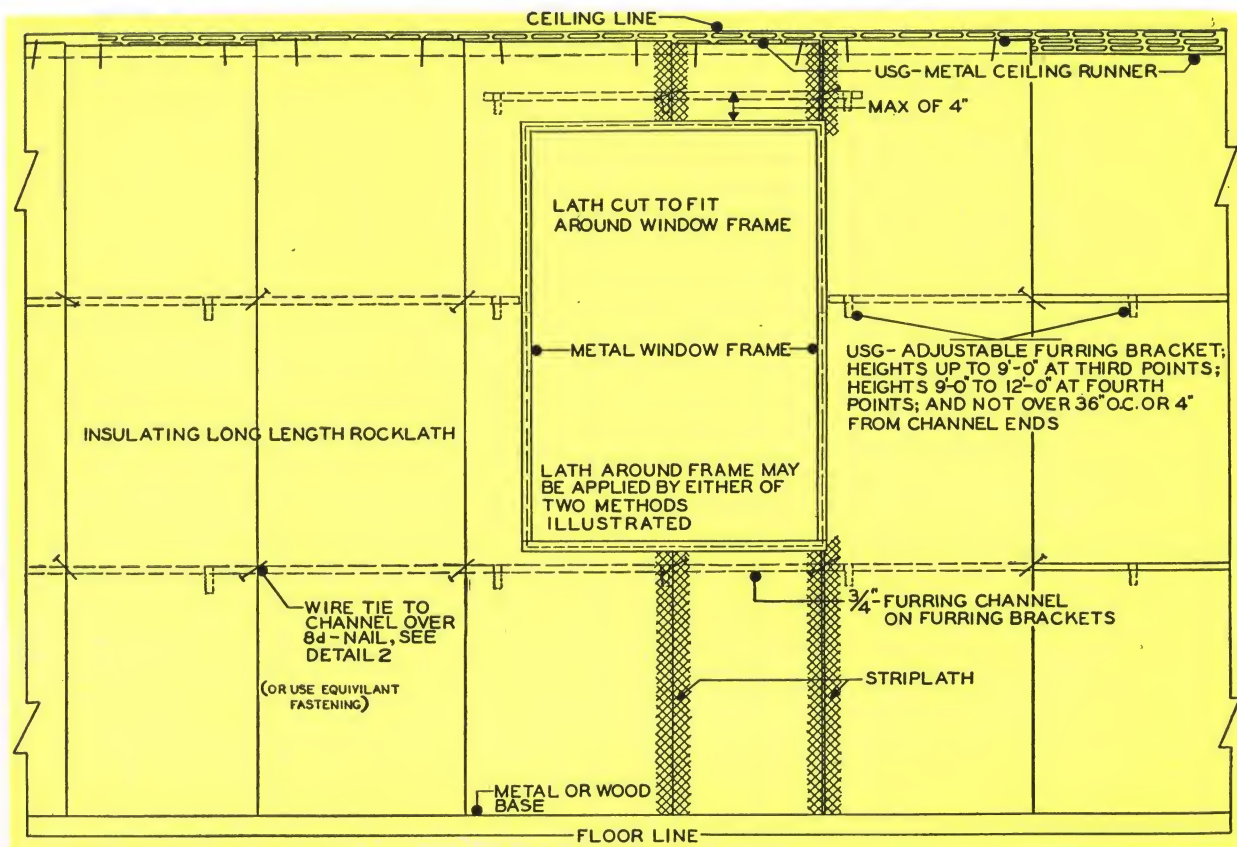
### LIMITATIONS

1. Limiting height is 12'0" unless special details are incorporated.
2. Minimum air space of 1" required. Space between back of lath and the wall shall not be filled with wool or other materials.

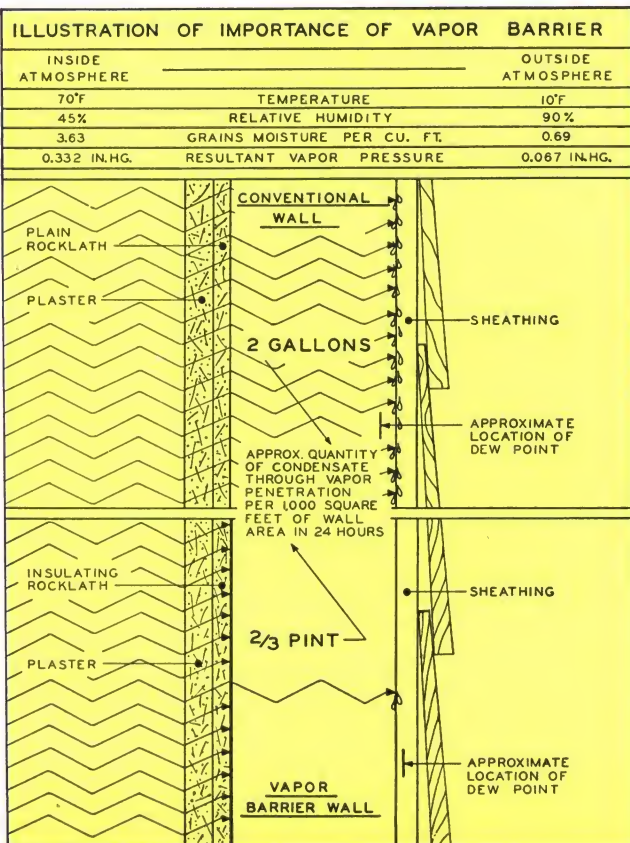


(For details of use with long length Rocklath see page 13)

## EXTERIOR WALL FURRING SYSTEM (Using Long Length Insulating ROCKLATH)



## VAPOR BARRIERS



**Vapor Barrier**—The insulating ROCKLATH applied to the inside face of all exterior walls and top floor ceilings provides an effective vapor barrier to help safeguard against harmful condensation within such spaces. Since aluminum foil is one of the best vapor barriers known and used commercially F.H.A. allows (at the discretion of local offices) the use of insulating ROCKLATH with blowing wool in frame walls, ceilings or roofs the aluminum foil providing the vapor barrier.

When the atmospheric conditions indicated in the accompanying chart are of considerable duration, the amount of condensation in the "Conventional Wall" is sufficient to damage the interior decoration, exterior paint, or any of the other wall components. In the "Vapor Barrier Wall," however, the quantity of condensate is so minor as to be readily dissipated.

## RECOMMENDATIONS

1. An efficient vapor barrier should be installed in all exterior walls and ceilings in locations where below freezing weather occurs for extended periods of time.
2. Vapor barrier should be located on the warm side of the exterior wall or top floor ceiling.
3. Vapor barrier should have a vapor permeability of not more than 1.00 perms. (Grains per square foot per hour per inch of mercury vapor pressure difference.)

## TECHNICAL DATA

Tests at a nationally recognized testing laboratory gave an average permeability for Insulating ROCKLATH and 1/2 inch gypsum plaster applied to wood studs in the normal manner of 0.67 perms.

## ROCKLATH PLASTER BASES

### TECHNICAL DATA

All Tests Made by Nationally Recognized Laboratories, Unless Otherwise Noted

#### PARTITIONS

Construction	Approx. Weight Lbs. per Sq. Ft. Lath and Plaster Only	Plaster & Aggregate	Thickness	Fire Rating	Sound Transmission Loss
$\frac{3}{8}$ " Plain ROCKLATH, nail-on 2"x4" studs.	12.0	Gypsum-Sand 1:2—1:2	$\frac{1}{2}$ "	45 min.	41.1
$\frac{3}{8}$ " Plain ROCKLATH nail-on, 2"x4" studs.	11.0	Wood fiber plaster.	$\frac{1}{2}$ "	1 hr.	41.1
$\frac{3}{8}$ " Perforated ROCKLATH nail-on, 2"x4" studs.	12.0	Gypsum-Sand 1:2—1:2	$\frac{1}{2}$ "	1 hr.	41.1
$\frac{3}{8}$ " Perforated ROCKLATH nail-on, 2"x4" studs.	8.0	Gypsum-Perlite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 hr.	
$\frac{3}{8}$ " Perforated ROCKLATH nail-on, 2"x4" studs.	8.0	Gypsum-Vermiculite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 hr.	
$\frac{3}{8}$ " Perforated ROCKLATH attached by BRACE-TITE system to TRUSSTEEL Studs.	8.0	STRUCTO-LITE	$\frac{1}{2}$ "	1 hr.	46.5
	12.0	Gypsum-Sand 1:2	$\frac{1}{2}$ "	1 hr.	
$\frac{3}{8}$ " Perforated ROCKLATH attached by TRUS-LOK Clips to TRUSSTEEL Studs	8.0	Gypsum-Perlite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 hr.	44.0

#### FLOORS AND CEILINGS

$\frac{3}{8}$ " Perforated ROCKLATH nailed to 2"x10" wood joists with $\frac{3}{8}$ " headed nails. $\frac{3}{4}$ " sub floor —resin sized building paper— T&G finished floor.	6.0	Gypsum-Sand 1:2—1:2	$\frac{1}{2}$ "	30 min.	
$\frac{3}{8}$ " Perforated ROCKLATH nailed to 2"x10" wood joists with $\frac{3}{8}$ " headed nails (5 per lath per joist). Striplath applied to joists with $\frac{3}{4}$ " nails having $\frac{1}{2}$ " head.	6.0	Gypsum-Sand 1:2—1:2	$\frac{1}{2}$ "	1 hr.	
$\frac{3}{8}$ " Perforated ROCKLATH nailed to 2"x10" wood joists with $\frac{19}{64}$ " head nails —4 per lath per joist.	4.0	Gypsum-Perlite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 hr.	
		Gypsum-Vermiculite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 hr.	
$\frac{3}{8}$ " Plain ROCKLATH nailed to 2"x10" wood joists with $\frac{19}{64}$ " head nails—4 per lath per joist—20 ga. 1" hex. wire mesh nailed to joists through lath.	4.0	Gypsum-Perlite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	1 $\frac{1}{2}$ hr.	
$\frac{3}{8}$ " Perforated ROCKLATH attached by BRACE-TITE system under steel joists. 2" concrete slab. Channels 16" o.c.	4.5	STRUCTO-LITE or gypsum perlite 100:2 $\frac{1}{2}$	$\frac{5}{8}$ "	1 hr.	
Same as above but with supplementary 14 Ga. diagonal wires.	4.0	STRUCTO-LITE or gypsum perlite 100:2 $\frac{1}{2}$	$\frac{1}{2}$ "	2 hr.	
Same as above but with channels 12" o.c. and supplementary 14 Ga. diagonal wires.	4.5	STRUCTO-LITE or gypsum perlite 100:2 $\frac{1}{2}$	$\frac{5}{8}$ "	3 hr.	

## GYPSUM LATHING SPECIFICATIONS

**Notes to Architect:** *Following are complete specifications for ROCKLATH plaster bases, including nail-on and clip attachment, and partition systems. Select paragraphs required to complete particular job specifications, taking into account the type of lath, type of plaster and minimum plaster thickness required by certain systems and fire ratings:*

**Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.**

*Where reinforced concrete or concrete fireproofed structural steel construction is used, it is recommended that relief from stresses imposed by such members be provided by locating the partitions so that the face of the plaster does not continue in the same plane across the face of such columns or beams. If partitions are not so located, one of the methods given below should be used to provide partial isolation from the faces of the structural members, in the following order of preference:*

1. Furring away from the face of such members.
2. By allowing the ROCKLATH to carry across the faces of such structural members.
3. By scatter nailing No. 30 asphalt felt then 2.5 lb. diamond mesh metal lath across the faces of such structural members, carrying felt and metal lath out at least 1" onto the ROCKLATH and stapling to the ROCKLATH.

### I. SCOPE

Unless otherwise indicated, all walls, partitions and ceilings are included.

### II. GENERAL CONDITIONS

In cold weather, building should be glazed and heated before lathing.

### III. MATERIALS

**A. Gypsum Lath**—Shall be ROCKLATH Plaster Base manufactured by UNITED STATES GYPSUM COMPANY in the following types and sizes as required:

1. (Plain) (Perforated) (Insulating ROCKLATH) ( $\frac{3}{8}$ " ( $\frac{1}{2}$ ") thick by 16" x 48".
2. Long length ROCKLATH  $\frac{1}{2}$ " thick, 24" wide and ceiling high lengths, with "V" edges.
3. Long length insulating ROCKLATH  $\frac{3}{8}$ " thick, 24" wide, and ceiling high lengths, with square edges.

**B. Cornerite**—Shall be USG Cornerite.

**C. Corner Bead**—Shall be USG

- (1A Expanded Flange)
- (4A Flexible Solid Flange Corner Bead)
- (For  $\frac{3}{4}$ " Bull Nose Bead specify either 10A Ex-

panded Flange or 5A Short Flange)

**D. Channels** shall be USG  $\frac{3}{4}$ " and  $1\frac{1}{2}$ " Cold Rolled Painted Channels.

**E. Striplath** shall be 3" wide USG Striplath.

**F. Resilient Clips**—Shall be USG

(R-1—Resilient Clips for wood stud or joist framing)

(R-2—Resilient Clips for corners and angles, wood frame construction)

(R-3—Resilient Clips of  $\frac{3}{4}$ " channels, ceilings only)

(R-5—Resilient Clips for masonry construction)

**G. BRIDJOINT Clips**—Shall be USG

(B-1—Field Clips for ( $\frac{3}{8}$ " ( $\frac{1}{2}$ ") ROCKLATH plaster base)

(B-1A—Field Clips for ( $\frac{3}{8}$ " plaster base)

(B-2—Corner Clip for  $\frac{3}{8}$ " ROCKLATH only)

**H. BRACE-TITE Clips**—Shall be USG BRACE-TITE Clips

(BT-1—For  $\frac{3}{4}$ " Channels)

(BT-A—For Acoustical base)

TRUS-LOK TL-1 field clips and TL-2 starter finisher clips manufactured by United States Gypsum Co.

**I. TRUS-LOK Clips**—Shall be USG TRUS-LOK TL-1 field clips and TL-2 starter-finisher clips manufactured by United States Gypsum Company.

**J. Ceiling Runner**—For 2" lath and plaster partitions shall be USG L-shaped Ceiling Runner and ceiling runner clips for attaching long length ROCKLATH to ceiling construction.

**K. Furring Brackets**—Shall be USG Adjustable Wall Furring Brackets.

**L. Bracing Clips**—Shall be USG bracing clips for temporary bracing of solid ROCKLATH and plaster partitions.

**M. Metal Studs**—Shall be ( $2\frac{1}{2}$ " ( $3\frac{1}{4}$ " ( $4$ " ( $6$ " TRUSSTEEL Studs, Runner Track and attachment shoes.

**N. Metal Base**—Shall be USG  $2\frac{1}{2}$ " high flush metal base with double, single, masonry and stud clips as required.

**O. Lath Nails**—Shall be  $1\frac{1}{8}$ " ( $1\frac{1}{4}$ " for  $\frac{1}{2}$ " ROCKLATH), 13 gauge, blued,  $\frac{1}{64}$ " flat head, smooth diamond point nails.

**P. Staples**—For attachment of Cornerite, Corner Bead and Striplath shall be gummed finish steel having  $\frac{9}{16}$ " legs and designed for mechanical driving.

## GYPSUM LATHING SPECIFICATIONS—CONT.

**Q. Hangers**—Shall be 8 gauge galvanized annealed wire.

**R. Tie Wire**—Shall be 16 gauge and 18 gauge galvanized annealed wire as hereafter specified.

**S. Tie-In Shoes**—Shall be 12" lengths of Cornerite or L-type ceiling runner.

### IV. GROUNDS

Shall be set to provide the following minimum plaster thickness including finish over the ROCKLATH plaster base:

- a)  $\frac{1}{2}$ " on wood frame or metal stud.
- b)  $\frac{3}{4}$ " each face on 2" ROCKLATH and plaster partition system.
- c) ( $\frac{1}{2}$ " ( $\frac{5}{8}$ " (1") on BRACE-TITE lathing system.
- d)  $\frac{3}{4}$ " on long length ROCKLATH exterior wall furring system.
- e) ( $\frac{1}{2}$ " ( $\frac{5}{8}$ " (1") ( $1\frac{3}{4}$ ") for ROCKLATH column fireproofing.

### V. ERECTION

#### A. Nail-On to Wood Framing Member:

ROCKLATH plaster base shall be applied face out with the long dimension at right angles to the framing members. The end joints shall be staggered to fall on different supports in adjacent courses, or the ROCKLATH shall be erected so that the end joints are continuous on a support. In the latter case the continuous joints shall be covered with 3-inch strip-lath and the long or edge joints shall be offset or staggered. In all cases, ROCKLATH joints shall be butted together. Space nails approximately  $\frac{3}{8}$ " from edges and approximately 5" apart, using four nails per lath per support. (For  $\frac{1}{2}$ " ROCKLATH with supports more than 16" o.c. nails must be spaced approximately 4" apart using 5 nails per lath per support.) Cut accurately and fit ROCKLATH plaster base neatly around all electrical outlets, etc. All internal angles shall be reinforced with cornerite over the ROCKLATH and all exterior angles shall be reinforced with corner bead secured to the ROCKLATH by stapling.

All openings in walls or ceilings over 2 square feet in area shall have 3-inch strip lath applied to the lath diagonally at all corners of the opening.

#### B. BRIDJOINT Lathing System

**1. For Wood Framing**—ROCKLATH shall be nailed to the framing members in such a manner that the end joints of the lath (16" dimension) do not fall on framing members and are staggered in adjacent

courses. End joints shall be secured to adjacent lath by use of a B-1 BRIDJOINT Field Clip at each corner of each lath. The internal corners of lath may be secured to each other by the use of B-2 BRIDJOINT corner clips. In lieu of B-2 clips, Cornerite may be stapled to the ROCKLATH. Corner Bead shall be applied to all exterior angles by stapling to ROCKLATH plaster base. Do not nail ROCKLATH to framing members in the angles.

**2. For Nailable Steel Framing**—ROCKLATH shall be nailed to the framing members, using a nail with a  $\frac{3}{8}$ " head and of sufficient length to provide proper "lock" in the nail retention curve or as recommended by the manufacturer of the framing member, in such a manner that the end joints of the lath (16" dimension) do not fall on the framing members. End joints shall be staggered in adjacent courses and shall be secured to adjacent lath by use of B-1 clips at each lath corner. Nail ROCKLATH to framing members in the angles. Cornerite shall be applied to interior angles and corner bead to exterior angles by stapling to the ROCKLATH.

#### C. Resilient Lathing System

ROCKLATH plaster base shall be applied face out with the long dimension at right angles to the framing members and with end joints staggered and over framing members. ROCKLATH shall be attached to the framing members by means of R-1 Resilient Clips nailed to framing and placed at every intersection of ROCKLATH edges with framing members, and at corners with R-2 Resilient Clips so that the ROCKLATH is secured by the clips spaced 16" o.c. in both directions. Corner Beads shall be stapled to ROCKLATH. Under no circumstances shall ROCKLATH plaster base be attached directly to the framing.

For resilient ceiling attachment with nail-on side wall, shim the perimeter of the ceiling with a 2" strip of  $\frac{3}{8}$ " ROCKLATH nailed to joists, place a B-2 BRIDJOINT Corner Clip on top course of wall ROCKLATH and nail bottom third of this course only. Insert ceiling ROCKLATH into B-2 clip at the angle, attach resilient clips to other edge and proceed with resilient application on ceiling.

#### D. Resilient Lathing System for Masonry

R-5 Resilient Clips shall be used for the attachment of ROCKLATH to masonry walls by placing the clips not over 16" o.c. along the long edge of the lath. ROCKLATH shall be erected with long dimension horizontal, with end joints staggered in adjacent courses. End joints of lath shall be secured to the

## GYPSON LATHING SPECIFICATIONS—CONT.

adjacent lath by use of an R-5 Resilient Clip at each corner of the lath.

Each clip shall be anchored to the masonry wall by nailing with 10d cut nails driven into the mortar joints or into the solid sections of concrete block and gypsum tile or by toggle bolting into hollow sections of such units.

### E. Grillage for Suspended Ceilings (BRACE-TITE)

Hangers shall be placed not over 3'0" o.c. along main runner direction and not over 4'0" o.c. in opposite direction and 6" from boundary walls or beams. They shall be of sufficient length to provide proper anchorage to main runners. 1½" cold rolled main runners shall be installed not over 4'0" o.c., properly leveled at designated height and hangers secured to runners not over 3'0". Channel ends shall be spliced not less than 12" with a double strand of tie wire near each end of splice. ¾" cold rolled channel cross furring shall be saddle tied to runner channel (12") (16") o.c. and 2" from parallel walls, beams and troffers, with double strand of 16 gauge tie wire. Channel ends shall be lapped 8" and tied near each end of splice with double strand of tie wire. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up to prevent clips from sliding off.

### F. Grillage for Furred Ceilings (BRACE-TITE)

¾" cold rolled channels shall be saddle tied to steel joists (12") (16") o.c. and 2" from parallel walls, beams or troffers with double strand of 16 gauge tie wire. Channel ends shall be lapped 8" and tied near each end of splice. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up.

### G. BRACE-TITE Lathing System for Plaster

Place a BRACE-TITE starter clip over the end of the ¾" channel at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾" channels. ROCKLATH shall rest on top of the starter clip loops, and shall be fastened to each channel with a BRACE-TITE field clip. ROCKLATH end joints shall fall between channels and shall be secured with USG B-1 BRIDJOINT field clips on both sides. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE field clips hooked over the channel and fastened into the eyes of the preceding clips. End joints of ROCKLATH, in adjacent

courses, shall be staggered. The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE field clip used for this final course shall be inserted through the eye of preceding clip, pulled tight into eye and excess length cut off.

Where ¾" channel runs are interrupted by light troffers, grilles, etc., BRACE-TITE starter clips shall be used to start a new course of ROCKLATH. For these locations, the extended leg of the starter clip shall be cut off so as not to protrude below the brown coat of plaster.

Angles between the ceiling and all vertical plastered planes shall be reinforced with USG Cornerite stapled to the ROCKLATH.

(For 2 or 3 hour fire rating) Lengths of 14 gauge wires shall be run diagonally across ceiling through the BRACE-TITE clip loops. (For 4 hour rating) Staple 20 gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of lath.

**H. BRACE-TITE Lathing System for Adhesive Application of Acoustical Tile.** Place the full loop end of a BRACE-TITE Acoustical Clip over the end of each of the ¾" channels at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾" channels. ROCKLATH shall rest on top of the BRACE-TITE Acoustical Clip and the half loop end snapped over the ¾" channel to secure the lath tight against the channel.

ROCKLATH end joints shall fall between channels and shall be secured with B-1A BRIDJOINT Clips to adjacent lath on both sides, flat side of clip on tile side. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE Acoustical Clips hooked over the channel behind the loop of the previous BT-A Clip and carried across the ROCKLATH face snapping the half loop end over the channel. End joints of the ROCKLATH shall be staggered in adjacent courses.

The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE Acoustical Clip shall be hooked over the ¾" channel where it meets the end wall, cut off approximately 2" longer than the piece of ROCKLATH it is supporting, and wire tied to the ¾" channel with loop of 18 gauge tie wire. The last course of ROCKLATH may be applied either at the end wall or in the field of the ceiling.

## GYP SUM LATHING SPECIFICATIONS—CONT.

Where  $\frac{3}{4}$ " channel runs are interrupted by light troffers, grilles, etc., the BT-A Clip is reversed and ROCKLATH installed in the same manner as the finishing course.

### I. Resilient Lathing System for Suspended Ceilings

R-3 Resilient Clips shall be used for the attachment of ROCKLATH to  $\frac{3}{4}$ " cold rolled ceiling channels spaced 16" o.c. by placing the lath at right angles to the channels, hooking the clips over the top flange of the channel and inserting the lath edge into the prongs of the clip. End joints shall fall under the channels and shall be staggered in alternate courses.

### J. TRUSSTEEL Stud ROCKLATH Partition

Runner tracks shall be aligned accurately according to partition layout and secured to concrete slabs with  $\frac{1}{2}$ " concrete stub nails not more than 24" on center, or wire-tied to suspended ceilings not more than 16" on center. Where TL-2 Starter-Finisher Clips are to be used at ceiling angles, runner track must be secured to concrete slab with firm attachment equivalent to power driven anchors spaced not more than 24" on center. Use runner track at top of door bucks and over and under borrowed lights.

Studs shall be placed vertically in the runner track not over 16" on center and each stud shall be secured to runner track with two attachment shoes both at top and bottom. Each pair of attachment shoes shall be wire-tied around stud with double strand of 18-gauge galvanized tie wire.

Studs shall be located approximately 2" from all door buck jambs, abutting partitions, or other construction. With steel bucks, an additional anchorage stud is required at each jamb. All corners shall be framed with a stud approximately 2" from each side of the internal angle. Securely wire-tie studs adjacent to door bucks to the jamb anchors.

Start lath application at the bottom with long dimensions of ROCKLATH at right angles to the stud. The Starter course of lath should be secured to the studs by TL-1 Field Clips hooked around the stud and over the top of the lath, and with TL-2 Starter-Finisher Clips driven between the runner track and floor slab in each stud space and tapped flush to the lath. The end joints of the ROCKLATH shall occur between studs, staggered in alternate courses, and joined together at corners with B-1 BRIDJOINT Clips.

Where wood grounds are wire-tied to the studs the lath shall be held in place by driving a nail into the ground at each stud with the nail head flush against the lath.

Succeeding courses of ROCKLATH shall be attached by inserting the lath into the top portion of the TL-1

Field Clips of preceding course and securing the top edge of lath to the studs with TL-1 Field Clips. The top course of ROCKLATH shall be cut to the width required, B-1 Clips placed on the previous course of lath in each stud space, and the lath secured at the ceiling angle with TL-2 Starter-Finisher Clips driven between the concrete ceiling slab and runner track.

Where ceilings are lathed, the last course of lath shall be cut to fit as required and held in place with cornerite stapled to ROCKLATH and wire-tied or stapled to ceiling lath.

Cornerite shall be used on all internal angles, and corner bead at external corners, by stapling to ROCKLATH plaster base.

### NOTES: RELATED INCLUSIONS

#### Door Bucks:

- A. Under appropriate section of the specification indicate metal door bucks shall be formed of not less than 16-gauge steel, shop primed. Secure anchorage to the floor shall be by two power driven anchors or equivalent attachment through a clip at each jamb. Angle inserts shall be welded in each jamb at top, 12" down from top and then at approximately 24" o.c. Use runner track at head of buck to receive studs over opening, runner to turn down 6" each side at the jambs and wire-tied to studs used as door buck struts. Secure studs to angle inserts by engaging in notches and wire-tying securely in place, using double strand of 18-gauge tie wire.
- B. Finished width of partition will be 2" over nominal stud width and door bucks must be furnished to provide required over-all thickness out-to-out of plaster.
- C. If wood door bucks are to be used under appropriate section of the specifications call for rough bucks of same width as studs, and of not less than  $1\frac{5}{8}$ " stock with the jambs running to underside of construction above and well anchored top and bottom.

#### Base or Grounds

Under appropriate section of the specification call for base or grounds as follows:

- A. For USH  $2\frac{1}{2}$ " Metal Base, specify the attachment of the base with USG Stud Base Clips for Metal Base wire-tied over ROCKLATH to the stud.
- B. For portland cement or terrazzo base, specify a USG 7A base screed wire-tied over the ROCKLATH plaster base to the studs at indicated height and 2.5 diamond mesh strip lath stapled to ROCKLATH to receive portland cement plaster or terrazzo.

## GYP SUM LATHING SPECIFICATIONS—CONT.

- C. For wood base, specify a  $\frac{7}{8}$ " x  $2\frac{1}{2}$ " wood ground strip wire-tied to the studs.
- D. For asphalt tile base cemented to plaster, specify either a  $\frac{1}{2}$ " x 1" wood ground strip wire-tied over ROCKLATH to studs, or a plaster screed, to insure  $\frac{1}{2}$ " plaster over ROCKLATH.
- E. Wherever metal trim is to be applied over the plaster, such as for chalk-boards, plaster screeds should be required to provide true surfaces to receive trim.

### Fixture Attachments

- A. For stair rails, lavatories, etc., bolts welded or locked to channels, angles, or plates shall be anchored to studs prior to lathing. (See Detail, pages 7 & 8.)
- B. For cabinets, 1" wood grounds may be tied to studs prior to lathing or 8-A picture mould may be tied over ROCKLATH to studs. (See Detail, pages 7 & 8.)

### K. 2" Solid ROCKLATH and Plaster Partition

Metal Base shall be attached to rough floor by nailing clips not over 24" o.c. according to partition layout. Snap side plates over clips, cutting and bending at corners as required. (If wood floor runner is used, specify in carpentry section.)

Ceiling Runner shall be properly aligned over floor runner and securely attached.

Tie-In Shoes shall be attached to exterior walls, columns, abutting partitions, etc., by nailing, wire tying or stapling, as required, at third points of partition height.

ROCKLATH Plaster Base shall be cut in lengths to allow  $\frac{1}{4}$ " minimum and  $1\frac{1}{4}$ " maximum top clearance in the ceiling runner. The ROCKLATH shall be erected vertically, engaging the bottom in the groove of floor runner and either tying or clipping top to ceiling runner. Vertical edges of ROCKLATH shall be kept as plumb as possible and the V-joint edges be brought into close contact one with the other. No vertical cut edges of lath shall be used in the central portion of partition. The use of lath having cut edges shall be confined to the ends of the partition or at door bucks. ROCKLATH shall be neatly cut for electrical conduit, other piping or door struts, and one side shall be covered with paper-backed metal lath fastened to the ROCKLATH. Where ROCKLATH Plaster Base intersects other partitions, exterior walls or columns, it shall be wire tied or fastened to tie-in shoes at the third point of height.

For partitions not over 9'0" in height, bracing shall consist of  $\frac{3}{4}$ " cold rolled channels erected horizontally, with flanges turned down, just below mid-point of height. The bracing member shall extend the full length of the partition and shall be fastened to the lath by the use of tie wires looped over the channel, or USG wire bracing clip, at center of the lath in such a manner as to keep the lath joints together as well as securing the channels to the lath. It shall be similarly wire tied or clipped to the lath at channel ends.

For partitions over 6'0" in length, the horizontal braces shall be reinforced by vertical struts every 6'0" or fraction thereof formed from  $1\frac{1}{2}$ " x  $1\frac{1}{2}$ " angles (or heavier materials) fastened securely at the bottom and wedged firmly against the construction at the head. Vertical struts shall be securely wire tied to horizontal braces.

For partitions over 9'0" in height, two horizontal braces at third points shall be used. Attach to lath in a similar manner as above.

Seasoned wood bracing members may be used in lieu of metal bracing, provided they are attached in a similar manner to hold lath rigid during initial plastering stages.

Pipe chase hollow partitions shall be constructed using two ceiling runners and two floor runners, erected to provide hollow space indicated on the plans. Horizontal  $\frac{3}{4}$ " channels shall be erected at third points of height and secured to (tie-in shoes at third points of height of abutting partitions) (vertical  $\frac{3}{4}$ " channels erected at both ends of pipe chase) and to intermediate vertical  $\frac{3}{4}$ " channels not over 4'6" o.c. Horizontal channels shall be cross-braced not over 30" on center with channel brackets, wire tied to horizontal channels. Long length ROCKLATH,  $\frac{1}{2}$ " thick and V-edge, shall be set in floor runner, clipped or wire tied to ceiling runner, and wire tied over a nail to each intermediate horizontal channel.

### NOTES: RELATED INCLUSIONS

**Door Bucks:**—*Shall be as specified elsewhere. Wood bucks shall be milled according to details, of select stock, resistant to splitting and prime coated if stop is integral with the buck. Wood floor runner may be used as rough buck if separate jamb plus casing is to be used. After ROCKLATH Plaster Base is set in the groove, 8d coated nails shall be driven in at a 45° angle each side, approximately 12" o.c., and bent over against the lath for subsequent anchorage in the plaster. Separate bracing is required to keep buck in*

## GYPSON LATHING SPECIFICATIONS—CONT.

alignment with partition and, in addition, a door templet will be required when integral finish buck is used.

Steel bucks shall be furnished with clip inserts for centering ROCKLATH in partition. If door buck struts are furnished, they shall not exceed  $\frac{5}{8}$ " in size in direction of partition thickness.

**Fixture Attachment**—Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of  $\frac{3}{4}$ " and inserting a plastic plug for anchorage of attachment screws.

Cabinet and shelving grounds shall consist of  $\frac{3}{4}$ " (actual dimension) by  $1\frac{1}{2}$ " wood strips, having 6d (minimum) coated nails driven  $\frac{5}{8}$ " into both edges at not over 12" o.c., attached to the ROCKLATH by nailing, wire tying or bolting.

Lavatory and sink hangers on 2" solid partitions shall be installed by wire tying an 18 gauge perforated plate of size equal to hanger (maximum 6"x24") to opposite side of the lath and placing hanger bolts prior to plastering.

**Ceramic Tile**—(Where ceramic tile is required over ROCKLATH, diamond mesh metal lath shall be stapled over the ROCKLATH plaster base with staples spaced approximately 8" on center, horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to  $\frac{5}{8}$ " grounds over lath as a base for the ceramic tile) or (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)

**Electrical Work**—Electrical conduit and outlet boxes shall be specified elsewhere. Embedded conduit size shall not exceed  $\frac{1}{2}$ " rigid. Switch boxes and convenience outlet boxes shall not exceed  $1\frac{1}{2}$ " in depth and, if plaster ring is used on 4"x4" convenience outlet boxes opening one side only, the box shall not exceed  $1\frac{1}{4}$ " in depth, to provide  $\frac{1}{2}$ " of plaster on the back side.

### L. Exterior Wall Furring System

Single Metal Base shall be attached to rough floor by nailing clips not over 24" on center. Snap the side plate over the clips, cutting and bending at corners as required. (Alternate: Wood runner shall be attached to the rough floor by nailing with cut nails or concrete stub nails in the center groove or through alternate outside edges not over 16" on center.) (If metal base is used, base must be grouted before erection of lath.)

Attach ceiling runner to the construction above as required, plumbing up from the floor runner, or install furring channel 6" from top as specified below.

Attach furring brackets, with serrated edges up, to the masonry walls not over 4" from columns or

other abutting construction and not over 36" on center horizontally and vertically, and as required above and below windows, using (one 2" cut nail in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks) ( $\frac{5}{8}$ " concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18 gauge tie wire. Excess bracket length shall be bent down.

$\frac{3}{8}$ " long length Insulating ROCKLATH shall be applied with the long length vertical and butted lightly, with the foil facing the furred space, by setting bottom of lath in the groove of the base grout, clipping top of lath to the ceiling runner and wire tying over a nail at the edges to intermediate horizontal channel furring. Cut and fit gypsum lath to allow slight clearance around window frames. Apply a 3" strip of metal lath over each ROCKLATH joint over and under windows.

### M. ROCKLATH and Plaster Column Fireproofing

**(Note to Architect:** For 1,  $1\frac{1}{2}$ , 2 or 3 hour fire rating, use following lathing specification.)

Apply  $\frac{3}{8}$ "x16"x48" Perforated ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required, fastened with double strands of 18 gauge galvanized tie wire located approximately 2" from ends of the lath and about 15" on center at intermediate points and wrapped around the perimeter of the column. USG 1A Expanded Flange Corner Bead shall be set at each corner to establish ( $\frac{1}{2}$ ") ( $\frac{5}{8}$ ") (1") ( $1\frac{3}{4}$ ") plaster thickness over the ROCKLATH by wire tying to the double strands of 18 gauge wire.

**Note to Architect:** For 4 hour Fire Rating, use following lathing specification:

Apply a double thickness of  $\frac{1}{2}$ "x24" long length ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required and fasten with a double strand of 18 gauge galvanized tie wire located about 4" from top and bottom and 24" on center at intermediate points and wrapped around perimeter of column. One inch hexagonal 20 gauge galvanized wire fabric shall be wrapped tightly around the column over the ROCKLATH. USG 1A Expanded Flange Corner Bead shall be wire tied to each corner to provide  $1\frac{1}{2}$ " plaster ground over the ROCKLATH Plaster Base.

**TECHNICAL INFORMATION**

# GYPSUM PLASTERS

## **AND FINISHING LIMES**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

"STRUCTOLITE," "RED TOP," "BONDCRETE," "PYROBAR," "ROCKLATH," "ORIENTAL," "SABINITE," "IVORY," "GRAND PRIZE," "MORTASEAL," "CHESHIRE," "CHAMPION," "STAR," "TRUSSTEEL" and "USG" are registered trade-marks; "HI-LITE," "RED TOP AUDICOTE" and "STRUCTO-GAUGE" are trade-marks owned by United States Gypsum and are used by it to distinguish products of its manufacture.

"STRUCTO-LITE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"RED TOP" identifies the particular plasters and finishes manufactured only by United States Gypsum.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by United States Gypsum.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by United States Gypsum.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by United States Gypsum.

"ORIENTAL" identifies the particular colored finishes manufactured only by United States Gypsum.

"SABINITE," "RED TOP AUDICOTE" and "HI-LITE" identify the particular acoustical plasters manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"CHESHIRE" identifies the particular high calcium finishing lime manufactured only by United States Gypsum.

"MORTASEAL" identifies the particular masonry lime manufactured by United States Gypsum.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"STRUCTO-GAUGE" identifies the particular prepared gauging plaster manufactured only by United States Gypsum.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

## BASECOAT PLASTERS

### RED TOP\* STRUCTO-LITE\* PLASTER

#### DESCRIPTION

RED TOP STRUCTO-LITE plaster is a high quality basecoat plaster formulated at the mill by proportioning a select expanded perlite with gypsum plaster.

STRUCTO-LITE is packaged in 80 lb. bags (regular) and 67 lb. bags (masonry) and requires the addition of clean water *only* on the job.

Complies with A.S.T.M. Designation C28-55 for "Gypsum Ready Mixed Plaster." The perlite used complies with ASTM Designation C35-54T "Inorganic Aggregate for use in Interior Plaster."

#### FUNCTION AND UTILITY

**1. Uniformly Strong Walls**—Proper proportioning of cement plaster with a well graded, controlled-density, perlite aggregate and a mill-controlled set that help insure strength in the plaster slab.

**2. Uniform Hardness**—Because the perlite in STRUCTO-LITE plaster is manufactured to conform with exacting specifications for density, strength and gradation, and is thoroughly mixed with the cement plaster at the mill.

**3. Over Fifty Per Cent Less Weight** in the finished plaster. Large savings in framing costs are possible due to this saving in weight.

**4. More Fire Resistant**—Greatly increased fire resistant ratings over those attained with sand in plastered walls and ceilings. Ideally suited where building code requirements demand maximum fire ratings not attainable with sand. For example:

- a.  $\frac{3}{8}$ " Perforated ROCKLATH plaster base attached to wood studs spaced 16" o.c. with R-1 Resilient Clips, plastered to  $\frac{1}{2}$ " grounds with STRUCTO-LITE—1 hr. fire rating.
- b.  $\frac{3}{8}$ " Perforated ROCKLATH nailed to wood joists spaced 16" o.c. and plastered to  $\frac{1}{2}$ " grounds with STRUCTO-LITE—1 hour fire rating.
- c.  $\frac{3}{8}$ " Perforated ROCKLATH attached with BRACE-TITE clips to TRUSSTEEL Studs, plastered to  $\frac{1}{2}$ " grounds with STRUCTO-LITE—1 hour fire rating.



- d. Steel joists 24" o.c.; 2" concrete over  $\frac{3}{8}$ " rib lath top of joists;  $\frac{3}{8}$ " perforated ROCKLATH attached with BRACE-TITE Clips to  $\frac{3}{4}$ " channels 16" o.c. wire-tied to joists, plastered with STRUCTO-LITE to  $\frac{5}{8}$ " grounds—1 hour fire rating.

STRUCTO-LITE plaster, having a mortar weight of half that of a gypsum-sand plaster proportioned 1:3, still develops comparable tensile and compressive strengths. STRUCTO-LITE is strong, quick-drying, light weight, and easy to finish over.

"k" FACTOR=1.4 (approximate) or about 3 times the insulation value of a gypsum-sand basecoat.

#### LIMITATIONS

Same as paragraphs 2 to 8 under Limitations for use on RED TOP Cement Plaster, page 4.

9. On jobs where STRUCTO-LITE is used to plaster over radiant panel heating systems, the system must be designed by the heating engineer to allow for the insulating value of STRUCTO-LITE. If the design did not contemplate an insulating value equivalent to that of STRUCTO-LITE, do not use it over radiant heating panel portions of the job. See Limitation 8 referred to above.

\*Trademarks Reg. U. S. Pat. Off.

## BASECOAT PLASTERS

### RED TOP CEMENT PLASTER

#### DESCRIPTION

RED TOP Cement Plaster is a neat gypsum plaster requiring the addition of an aggregate and water on the job. It is the basecoat that receives the finish coat plaster.

Complies with ASTM Designation C28-55 for "Gypsum Neat Plaster" and Federal Specification SS-P-402, Type N.

#### FUNCTION AND UTILITY

**RED TOP** Cement Plaster is used for scratch (1st coat) and brown (2nd coat) wherever good plastering aggregate is available.

**Fireproof**—Made from gypsum rock, it is incombustible and will not transmit high temperatures until completely calcined; a slow process. In this respect, gypsum plaster is unique. See fire test data page 6, for authoritative fire ratings.

**Adaptable**—RED TOP Cement Plaster bonds firmly with ROCKLATH plaster base, metal lath, fiber insulation lath, PYROBAR gypsum partition tile, clay tile, porous brick and certain other approved plaster bases.

RED TOP Cement Plaster is the standard of excellence for receiving such finish coats as lime, putty, keene's cement, gypsum trowel finish, gypsum float finish, ORIENTAL\* interior colored finish, acoustical plasters, etc. It is excellent base for adhesive application of acoustical tile.

RED TOP Cement Plaster is plastic, permitting wide latitude in its use for plain or curved surfaces.

**Uniform**—RED TOP Cement Plaster is manufactured on a nation-wide basis within narrow limits of tolerance. Its "stabilized set" minimizes the hazards due to impure water or aggregate and job conditions. Its set is adjusted for seasonal conditions.

**Strong**—When mixed with good sand according to specifications, RED TOP Cement Plaster has a compressive strength up to 1,200 lbs. psi for normal mixes (see test data, page 6). It is capable of withstanding normal wear and usage for the life of the building.

**Economical**—RED TOP Cement Plaster is lowest in cost of the various types of gypsum basecoats because:

The neat plaster is low in cost and is mixed with economical aggregate which increases bulk and coverage.

RED TOP Cement Plaster is highly plastic, thus is easily and quickly applied by the mechanic.

Normal usage requires little or no maintenance.



#### LIMITATIONS OF USE

1. RED TOP Cement Plaster should have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength. Sand content is easily calculated. A No. 2 shovel full of damp sand weighs approximately 15 lbs. The light weight aggregates are generally shipped in 3 or 4 cu. ft. bags.
2. Two coat plastering not recommended over fiber insulation lath.
3. Under no conditions should RED TOP Cement Plaster be applied to concrete. Use BONDCRETE\* Plaster, described on page 5.
4. RED TOP Cement Plaster should not be used where contact with excessive water or moisture is expected. In such instances, use portland cement-lime plaster.
5. RED TOP Cement Plaster is an interior basecoat plaster and should not be used on the exterior where exposed to the elements.
6. Because bituminous compounds do not provide an ideal base for gypsum plaster basecoats, plaster application on masonry walls and concrete that have been coated with these compounds **is not recommended**.
7. Due to possibility of condensation or water seepage, plastering direct to interior side of exterior masonry walls is not recommended. Furring such walls prior to plastering **is recommended**.
8. When used in conjunction with radiant heating systems, the temperature at the surface of the plaster shall not exceed 115° Fahrenheit. The thermal conductivity of gypsum-sand plaster is approximately three times that of a gypsum-lightweight aggregate mix.

\*Trademark Reg. U. S. Pat. Off.

## BASECOAT PLASTERS

### RED TOP WOOD FIBER PLASTER



#### DESCRIPTION

RED TOP Wood Fiber Plaster is a factory-prepared gypsum basecoat plaster containing finely-shredded, selected wood fiber. It requires the addition of water only on the job.

Complies with ASTM Designation C28-55 "Gypsum wood-fibered plaster" and Federal Specifications SS-P-402, Type W.

#### FUNCTION AND UTILITY

**Stronger**—Compared to plaster sanded 1:3, Wood Fiber Plaster has:

3 times greater compressive and tensile strength.

2½ times greater resistance to lateral impact.

50 per cent greater surface hardness.

Consequently, has greater resistance to cracking.

**Fireproof**—Generally 50 per cent more fire resistant than sanded plaster. See ratings on page 6.

**Factory Prepared**—Particularly suitable where good aggregates are unavailable. Avoids dangers of improper proportioning of aggregates.

**Lightweight**—Dead load is 25 per cent lighter than sanded plaster.

**Cost**—A wood fiber basecoat plaster job costs approximately 10 to 15 per cent more than RED TOP Cement Plaster sanded on the job.

#### LIMITATIONS

Same as paragraphs 2 to 7 under Limitations for use of RED TOP Cement Plaster, page 4.

\*Trademark Reg. U. S. Pat. Off.

### BONDCRETE\* PLASTER



#### DESCRIPTION

RED TOP BONDCRETE is a gypsum basecoat plaster specially formulated to bond with rough interior monolithic concrete surfaces. It is factory prepared, requiring addition of water only on the job.

There are no ASTM or Federal Specifications covering this type of plaster.

#### FUNCTION AND UTILITY

BONDCRETE is plaster especially prepared for application to concrete. It provides the bonding plaster to receive a browning, or leveling, coat of RED TOP Cement Plaster or Wood Fiber Plaster when necessary.

If a leveling coat is unnecessary, the finish plaster may be applied directly to the BONDCRETE.

**Bonding Strength**—BONDCRETE adheres well to properly prepared concrete surfaces. See Surface Preparation under Specifications for proper conditioning of concrete surfaces. This is important.

The thermal coefficient of expansion of BONDCRETE is approximately the same as for concrete.

**Low Cost**—An economical bonding coat to provide for the application of plaster direct to concrete surfaces.

#### LIMITATIONS OF USE

1. BONDCRETE should be used only on concrete that is properly prepared for plastering. It should never be applied to smooth concrete. (See RED TOP Cover Coat, page 10.)

2. Maximum thickness of BONDCRETE and basecoat shall not exceed ⅜" on ceilings or ⅝" on walls. If additional thickness is required, metal lath shall be secured to the concrete surfaces.

3. The same as paragraphs 4 to 8 under RED TOP Cement Plaster, page 4.

# BASECOAT PLASTERS

## TECHNICAL DATA—AVERAGE TEST RESULTS

(NOTE—results from separate producing plants may vary somewhat—above or below these average figures)

MIX:	STRUCTO-LITE	WOOD FIBER	CEMENT PLASTER					
			SAND			VERMICULITE		PERLITE
			1:1	1:2	1:3	100:2	100:3	100:2 100:3
COMPRESSIVE STRENGTH—psi (dry)	900	2600	2100	1200	750	500	300	1000 650
TENSILE STRENGTH—psi (dry)	150	440	245	170	120	130	90	165 105

## FIRE TEST DATA

(All tests made at nationally recognized fire testing laboratories)

PANEL TYPE				RATING
CONSTRUCTION	TYPE BASE	PLASTER & AGGREGATE	THICKNESS	
PARTITIONS				
Wood Frame	3/8" ROCKLATH Plain	Gypsum-Sand 1:2, 1:2	1/2"	45 Minutes
Wood Frame	3/8" ROCKLATH Plain	Gypsum Wood Fiber	1/2"	1 Hour
Wood Frame	3/8" Perf. ROCKLATH	Gypsum-Sand 1:2, 1:2	1/2"	1 Hour
Wood Frame	3/8" Perf. ROCKLATH	Gypsum-Perlite 100:2 1/2	1/2"	1 Hour
Wood Frame	3/8" Perf. ROCKLATH	Gypsum-Vermiculite 100:2 1/2	1/2"	1 Hour
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:3	3/4"	45 Minutes
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:2	3/4"	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	3/4"	1 1/2 Hours
Wood Frame	Metal Lath	Gypsum-Vermiculite 100:2 1/2, 100:3 1/2	3/4"	1 Hour
3" Hollow PYROBAR		Gypsum-Sand 1:3	1/2"	3 Hours
4" Hollow PYROBAR		Gypsum-Sand 1:3	1/2"	4 Hours
Solid	Metal Lath	Gypsum-Sand 1:2, 1:3	2"	45 Minutes
Solid	Metal Lath	Gypsum-Sand 1:2, 1:2	2"	1 Hour
Solid	Metal Lath	Gypsum-Perlite 100:2, 100:3	2 1/2"	2 Hours
Solid	ROCKLATH	Gypsum-Sand 1:1, 1:2	2"	1 Hour
Solid	ROCKLATH	Gypsum-Perlite 100:2, 100:3	2"	1 1/2 Hours
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:2, 1:3	3/4"	45 Minutes
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:2, 1:2	3/4"	1 Hour
TRUSSTEEL Stud	Metal Lath	Gypsum Wood Fiber	7/8"	2 Hours
TRUSSTEEL Stud	Metal Lath	Gypsum-Perlite 100:2, 100:3	1"	2 Hours
TRUSSTEEL Stud	3/8" Perf. ROCKLATH BRACE-TITE Clips	Gypsum-Sand 1:2 or STRUCTO-LITE	1/2"	1 Hour
CEILINGS				
Wood Frame	3/8" Perf. ROCKLATH	Gypsum-Sand 1:2	1/2"	45 Minutes
Wood Frame	3/8" Perf. ROCKLATH (A)	Gypsum-Sand 1:2	1/2"	1 Hour
Wood Frame	3/8" Perf. ROCKLATH	Gypsum-Perlite 100:2 1/2	1/2"	1 Hour
Wood Frame	Metal Lath (B)	Gypsum-Sand 1:2, 1:3	3/4"	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	3/4"	1 Hour
Steel Joist (C)	3/8" Perf. ROCKLATH BRACE-TITE Clips Channels 16" o.c.	Gypsum-Perlite 100:2 1/2 or STRUCTO-LITE	5/8"	1 Hour
Steel Joist (C)	Same, plus 14 Ga diagonal wire connecting clips	Gypsum-Perlite 100:2 1/2	1/2"	2 Hours
Steel Joist (C)	Same, except channels 12" o.c.	Gypsum-Perlite 100:2 1/2	5/8"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Sand 1:2, 1:3	3/4"	2 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	3/4"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum Wood Fiber	1"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum Wood Fiber	1"	4 Hours
Cellular Steel Floor	Metal Lath (E)	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum-Perlite 100:2, 100:3	1"	4 Hours
COLUMNS				
Steel Section	Metal Lath	Gypsum-Sand 1:2, 1:3	3/4"	1 Hour
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1"	2 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1 3/8"	3 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3 or Structo-Lite	2"	4 Hours
Steel Section	Pyrobar-2" Solid, or 3" Hollow	Gypsum-Sand 1:3	1/2"	4 Hours
Steel Section	3/8" Perf. ROCKLATH	Gypsum-Sand 1:2 1/2	1/2"	1 Hour
Steel Section	3/8" Perf. ROCKLATH	Gypsum-Sand 1:2 1/2	5/8"	1 1/2 Hours
Steel Section	3/8" Perf. ROCKLATH	Gypsum-Perlite 100:2 1/2	1"	2 Hours
Steel Section	3/8" Perf. ROCKLATH	Gypsum-Perlite 100:2 1/2	1 3/4"	3 Hours
Steel Section	2 layers L. L. R. L. Plus 1" 20-ga. mesh	Gypsum-Perlite 100:2, 100:3	1 1/2"	4 Hours

(A) Lath applied with 1 1/8", 13 gauge nails, 3/8" head and joints covered with Striplath. 1 3/4" nails. (B) Lath applied with 1 1/2", 11 gauge, 7/16" head barbed roofing nails, 6" O.C. (C) 2 1/2" reinforced concrete slab on Riblath or 2" precast gypsum tile above. (D) Ceiling 9" or more below floor slab. (E) Ceiling 3" or more below floor slab. (F) Self-furring metal lath wrapped tight to column or diamond mesh on channel frame not filled solid to column.

## FINISHING PLASTERS

### DESCRIPTION

The finish coat plaster provides the base for final wall or ceiling decoration. It is applied to a thickness of  $\frac{1}{16}$ " to  $\frac{1}{8}$ ", usually over a gypsum plaster basecoat.

Several types of finish coats are available, each with characteristics to serve specific requirements, and generally classified according to the principal cementitious ingredient as follows:

**1. Lime and Gauging**, commonly known as "white coat" for a smooth white trowel finish. It consists of lime, soaked to a smooth putty, and mixed with gypsum gauging plaster. With addition of sand, is adaptable for sand float finishes. The three essentials to a good white coat job are:

- Lime must be highly plastic and completely hydrated.
- Correct proportioning of gauging plaster to lime putty (see specifications) and thorough blending of ingredients.
- Careful application and sufficient trowelling to produce a smooth glossy surface.

**2. Lime and Keene's**—for a hard smooth white trowel finish. With addition of sand, is adaptable for sand float finishes. Also available mill mixed and colored under "ORIENTAL"\* Interior Finish brand.

**3. Gypsum**—Trowel (smooth), or sand float prepared finishes.

**4. Acoustical Plaster**—(SABINITE\*), (RED TOP AUDICOTE) (Hi-Lite) for sound absorption. (See page 10 and AIA Folder 39-B.)

### ESSENTIALITY OF COMPLETE HYDRATION IN DOLOMITIC FINISHING LIMES

Some years ago an exhaustive investigation was undertaken by the National Bureau of Standards in co-operation with several architects and lime manufacturers to determine reasons for "lime bulges" (delamination of finish from basecoat) occurring on many government and private buildings. The failures investigated occurred on surfaces which had been "white coated" with *dolomitic* hydrated finishing limes from the Ohio fields, which have been widely used. Failures often occur 5 or 10 years after erection of the buildings.

After much analysis, it was the consensus of opinion that the delayed hydration and attendant expansion of unhydrated oxides in the "normal" dolomitic finishing limes resulted in bulging and delamination.

To correct this difficulty, United States Gypsum Company took the lead in developing "IVORY"\* Double Hydrated finishing lime, a "fully" or "pressure" (less than 8 per cent unhydrated) hydrated Ohio dolomitic finishing lime.

ASTM specifications C206-49 for *special* finishing lime and proposed amendments to Federal specifications, have been written to cover 92 per cent hydrated limes; a specification has been published by the National Lime Association. This type of finishing lime is required by ASA Specifications for Gypsum Plastering, A42.1-1955.

Note that all high calcium hydrated limes (properly soaked) comply with these requirements as do high calcium quicklimes (properly slaked).

### TECHNICAL DATA—FINISH PLASTERS

	GAUGING PLASTER TO LIME	STRUCTO-GAUGE TO LIME		QUICK TROWELLING KEENE'S TO LIME		GYPSUM TROWEL FINISH	GYPSUM FLOAT FINISH	ORI- ENTAL FINISH
Mix by weight of dry materials:	1:2	1:2 Medium Hard	1:1 Hard	2:1 Medium Hard	4:1 Hard	NEAT	NEAT	NEAT
Color	White	White	White	White	White	White	White or Gray	7 Colors
Finish Texture	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth	Float	Float
Hardness in Kilograms (†)	34	56	108	50	70	55	(‡)	(‡)
Workability	1	1	2	4	7	3	6	5
Cost Factor Labor & Mat'l.	100	125	150	170	180	125	125	160

(†) Kilograms required to force a 10mm ball .01" into plaster face.

(‡) These are hard finishes but the aggregate in the surface does not permit an indication with this test.

## FINISHING PLASTERS—CONT.

### LIME PUTTY—GAUGING (WHITE COAT) FINISH

#### DESCRIPTION

Hydrated Finishing Lime (or Finishing Quicklime) is soaked (or slaked) to putty consistency, blended in proper proportion with gypsum gauging plaster, and is trowelled to a smooth, hard finish usually over a properly prepared gypsum basecoat. This is by far the most widely used plaster finish coat due to ease of application, flexibility, whiteness and economy.

The function of lime in a finish plaster is to provide the "spread" and plasticity to permit fast, easy application with full flexibility and economy. Lime does not "set," but hardens slowly; it likewise shrinks on drying. Therefore, gypsum gauging must be blended into the lime in proper proportion to provide initial set and strength, and to avoid shrinkage cracks.

**IVORY\***—A double hydrated (over 92%) special finishing lime that will not expand measurably in the wall. *Requires no soaking* to produce a smooth, uniform, white, highly plastic putty. May be mixed by adding dry lime to water in mechanical mixer because it develops its normal plasticity almost immediately then adding gauging. This is the preferred lime. Meets ASTM Designation C206-49 Type S and Federal Specification SS-L-351, Type F, including the added requirement of not more than 8% unhydrated oxides.

**RED TOP and GRAND PRIZE\***—Shipped from *Genoa, Ohio*, are normal dolomitic hydrated finishing limes, and are only partially hydrated. They comply with ASTM Designation C6-46, Type N, and Federal Specification SS-L-351, Type F, but do not comply with specifications limiting the unhydrated oxides to 8 per cent.

**RED TOP Hydrated Limes** shipped from *Farnams, Massachusetts* and *New Braunfels, Texas*, are high calcium limes and are completely hydrated. They comply with ASTM C206-49 Type S and Federal Specification SS-L-351, and meet specifications limiting the unhydrated oxides to not more than 8 per cent.

All types of USG\* hydrated lime except **IVORY** Finish Hydrate require overnight soaking. They yield a smooth, highly plastic putty of exceptional purity. Until the advent of pressure hydrates, such as **IVORY**, they were the standards of excellence.

**RED TOP and CHESHIRE Brands**—Are high calcium finishing quicklimes. When properly slaked and aged for at least 16 hours, hydration is complete, (over 92%) thereby insuring against further hydration and attendant possibilities of expansion on the wall. Comply with ASTM Designation C5-26, and Federal Specification SS-Q-351. They have unusually high plasticity and purity.

### GAUGING PLASTERS

1. **CHAMPION\*** and **STAR\*** are **WHITE** Gauging Plasters, for blending with lime putty to provide initial set and strength. They are ground to the proper fineness to blend readily and completely, thus minimizing the danger of check-cracking, crazing, etc. when properly used. They give strength and hardness to the surface finish. **CHAMPION** has a quicker "set" than **STAR** Gauging Plaster. They are the preferred gauging plasters because of the extreme whiteness of the finish when used with limes of high purity.

Complies with ASTM Designation C28-55 "Calcined gypsum for finishing coat" and Federal Specification SS-P-402, Type G.

2. **RED TOP GAUGING** is a "local" gauging plaster, so called because it is made from a rock grade that is used in basecoat plasters. It is available with slow or fast "set." It is distinguished from White Gauging Plasters by its darker color. Except for color, **RED TOP** Gauging Plasters are the equal of **CHAMPION** and **STAR** Gauging Plasters.

Compliance is the same as for "white" gauging plasters above.

3. **STRUCTO-GAUGE** is a new high strength gypsum gauging plaster for use with lime-putty to produce surfaces of extreme hardness and durability, designed for use in hospitals, schools and other buildings where a hard finish is desired. **STRUCTO-GAUGE** has excellent mixing qualities, applies easily and requires a minimum of troweling to produce a smooth finish.

Complies with ASTM Designation C28-55 "Calcined gypsum for finishing coat and Federal Specification SS-P-402, Type G, and, in addition, has a compressive strength (dry) of not less than 5000 psi.

#### PROPORTIONING—See Specifications

#### LIMITATIONS OF USE

1. For interior application only.
2. Recommended proportioning must be observed. Failure to use sufficient gauging plaster, to blend thoroughly, or to trowel adequately often results in check-cracking, crazing, lack of hardness and bond failure.
3. Designed for normal humidity conditions. Where higher than normal humidity or exposure to wetting is expected, use Keene's Cement or **STRUCTO-GAUGE\***. If humidity or exposure to moisture is extreme or continuous, use portland cement-lime plaster.
4. Designed for normal usage. If greater hardness, and resistance to abrasion are required, use Keene's cement or **STRUCTO-GAUGE**.
5. Must be applied to gypsum or lime plaster basecoat. The bond of lime putty gauging finish to portland cement plasters is inadequate. Do not apply direct to masonry.

*\*Trademarks Reg. U. S. Pat. Off*

## FINISHING PLASTERS—CONT.

### KEENE'S-LIME FINISH

#### DESCRIPTION

RED TOP keene's cement is a high strength, white gypsum plaster. Keene's-lime finish is composed of lime putty blended with keene's cement in proportions required to obtain desired hardness.

Complies with ASTM Designation C61-40 and Federal Specification SS-C-161, Type I (Regular) and Type II (Quick Troweling).

#### FUNCTION AND UTILITY

In addition to those listed for lime putty-gauging, are:

**Resistance to Abrasion.** Keene's cement has exceptionally high strength and surface hardness. See Technical Data on page 7.

**Low Water Absorption.** Keene's cement, having a high density, has low water absorption.

**Choice of Hardness.** Keene's cement is mixed with lime putty in varying proportions for "hard" and "medium hard" finishes. See Technical Data and specifications.

**Two Types.** Regular and Quick Troweling. Regular keene's sets slowly, requires more troweling and may be used with any proportion of lime.

Quick Troweling keene's sets faster, requires less troweling and must be used with a minimum of 25 lbs. of dry hydrated lime per 100 lbs. of keene's cement.

#### LIMITATIONS OF USE

1. Keene's cement is for interior finishes only.

2. Keene's cement finish is not recommended where exposure to water is extreme or continuous. Use portland cement-lime plaster.

3. For application over gypsum basecoats of high compressive strength only.

### MOULDING PLASTERS

Moulding Plasters are made for use in specialized work such as casting ornamental enrichments or running cornice. Moulding Plasters may be used either neat or with the addition of lime putty. In cast work, moulding

plaster is used neat whereas for running cornice a small portion of lime is used. Moulding Plaster is available in white and local grades as well as in quick or slow set.

### CASTING PLASTER

RED TOP Superfine Casting is similar to RED TOP White Moulding Plaster except that it has a much finer particle size. It is ideal for use in modeling done directly in the

plaster. The fine particle size results in smoother castings showing excellent detail—important in the making of fine plaques and art statuary. Only water is added in mixing.

### PREPARED GYPSUM FINISHES

#### RED TOP Gypsum Trowel Finish and RED TOP Gypsum Sand Float Finish

##### DESCRIPTION

RED TOP Trowel and Sand Float finishes are mill-prepared gypsum finish coat plasters requiring the addition of water only.

There are no ASTM or Federal Specifications covering this type of plaster.

##### FUNCTION AND UTILITY

**RED TOP Gypsum Trowel Finish**—is used where hard, smooth surfaces are desired.

**RED TOP Gypsum Sand Float Finish**—is used where a quality float finish is desired.

**Strength**—approximately twice the strength of ordinary lime-gauging finishes.

**Early Decoration**—may be painted as soon as set and dry.

**Factory Prepared**—mill selection of ingredients and formulation insure uniform results and avoid variations possible with job mixing.

**Non-Alkaline**—contain nothing injurious to paint or decorations.

**Bond**—provides durable and natural bond to gypsum basecoat.

**Cost**—slightly higher than job-prepared finishes.

##### LIMITATIONS

1. Designed for application over gypsum basecoats only.

2. Should not be used on exterior surfaces where exposed to the elements or on interiors exposed to excessive moisture.

## FINISHING PLASTERS—CONT.

### ORIENTAL\* INTERIOR COLORED FINISHES

#### DESCRIPTION

ORIENTAL Interior Finish is a mill-prepared and colored finish plaster requiring the addition of water only.

There are no ASTM or Federal Specifications covering this type of plaster.

#### FUNCTION AND UTILITY

**Integrally Colored** at factory, requiring no decoration. Permits early occupancy. Avoids variations of color intensity that are possible when colors are mixed at site.

**Colors** (with LIGHT REFLECTION for float finish).

White—81%; Pewter Gray—52%;  
Surf Green—56%; Old Ivory—77%;

Desert Rose—56%; Azure—58%;  
Sahara Gold—63%.

**Texture**—A finely floated surface or special textured finish may be obtained.

**Strength**—highly resistant to abrasion due to very great hardness.

#### LIMITATIONS OF USE

1. ORIENTAL Interior is for producing finely floated surfaces or textures. Do not use for a smooth finish.
2. To be used on interiors only.

### ACOUSTICAL PLASTER FINISHES

#### SABINITE\* ACOUSTICAL PLASTER

SABINITE Trowel Finish is a highly efficient acoustical plaster, scientifically prepared to produce a continuous *trowel or float finish* of exceptional sound absorbent qualities. It is manufactured in four standard colors and white and requires the addition of water only. Basically mineral, it is incombustible.

#### HI-LITE ACOUSTICAL PLASTER

HI-LITE Acoustical Plaster is a highly efficient acoustical plaster with exceptional light reflecting qualities which provides a stipple, or stipple perforated finish. Having a harder surface than SABINITE finish, it is more suitable for side walls above wainscots which require sound conditioning. It is manufactured in white only and requires the addition of water only.

#### RED TOP AUDICOTE ACOUSTICAL PLASTER

AUDICOTE Acoustical Plaster is a mill prepared acoustical plaster requiring the addition of clean water only. It may be applied by machine or by hand over basecoats of gypsum plaster, portland cement plaster, monolithic concrete or other surfaces that are firm, clean and free of water soluble materials or oily film. It is manufactured in Satin white only.

#### LIMITATIONS (All Types)

1. Designed for use on ceilings and areas not exposed to rough usage.
2. To insure best results, acoustical plasters must be applied in strict accordance with manufacturer's directions.
3. Not recommended over radiant heated panel areas, due to low thermal conductivities.

\*Trademark Reg. U. S. Pat. Off.

## EXTERIOR STUCCO FINISH

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### ORIENTAL EXTERIOR COLORED FINISHES

#### DESCRIPTION

ORIENTAL Exterior Finish is a factory-prepared stucco for exterior application over a portland cement-lime basecoat. It requires the addition of water only on the job.

**Colors:** Pewter Gray, Eggshell Ivory, Sun Tan, Stone Gray, Copper Rose, Alamo Buff, Mission Cream, Cascade Green, Pueblo Tan, Indian Coral, Rancho Brown and white.

#### FUNCTION AND UTILITY

**Factory Prepared**—Uniformity in formulation insures endurance under all weather conditions. Avoids possibility of job-mixing errors.

**Integral Coloring**—Prevents variations possible where colors are added at site.

**Decoration**—Requires none.

**Adaptable** to any texture.

#### LIMITATIONS

1. Not designed for use as a smooth trowel finish.
2. Requires a portland cement-lime basecoat.

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## EXTERIOR STUCCO BASECOAT

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#### DESCRIPTION

Exterior stucco basecoat is prepared on the job from portland cement, lime, sand and water and is the basecoat that receives the ORIENTAL\* Exterior (colored) Finish.

#### FUNCTION AND UTILITY

Exterior stucco basecoat is used for the scratch (first coat) and brown (second coat) over cement block or clay tile, or over sheathing to which STUCCO MESH or self-furring metal lath has been properly applied.

**Fire Resistant**—Made from portland cement, lime and sand, it will not support combustion.

**Weather Resistant**—Suitable for normal exposure to climatic variations.

**Strong**—Properly mixed and cured, it provides a dense, hard base that will withstand normal wear and usage.

**Economical**—Use of standard, readily available materials provides a low cost basecoat.

#### LIMITATIONS OF USE

1. Because of the use of portland cement, each coat requires curing with water after set.
2. Must not be applied in freezing weather or over bases containing frost.
3. Must not be used on smooth, dense surfaces or over old, unsound stucco unless stucco mesh reinforcement is first properly applied.

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## INTERIOR PORTLAND CEMENT-LIME PLASTER

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#### DESCRIPTION

Portland cement-lime plaster basecoat is prepared on the job from portland cement, lime, sand, and water.

#### FUNCTION AND UTILITY

A portland cement-lime plaster is used for the basecoat over cement block, clay tile, or metal lath as a base for ceramic tile or in areas subject to high moisture conditions.

It is incombustible and strong.

\*Trademarks Reg. U. S. Pat. Off.

#### LIMITATIONS OF USE

1. Because of the use of portland cement, each coat requires curing with water after set.
2. Must not be used over smooth, dense surfaces, gypsum lath or gypsum block without first securing metal lath to such surfaces.
3. Provisions for relief of setting and drying shrinkage should be made at locations such as ceiling-wall intersections, beams, columns, or fixtures passing through the plaster. Construction joints should be provided to avoid excessive continuous areas.

# PLASTERING SPECIFICATIONS

## Notes to Architect

Select one or more of the following base coat plasters, aggregates and finish coat plasters as desired or required to meet fire-resistant ratings. Where conductivity of the plaster is a factor, see limitations on Pages 3, 4, and 10.

Where "contact," "furred" or "suspended" lath and plaster ceilings are located under roof deck construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

## I. SCOPE

Unless otherwise specified or shown on the drawings, all walls and ceilings shall be plastered as herein described.

## II. GENERAL PROVISIONS

In cold weather, the temperature of the building shall be maintained in the uniform range above 55° for an adequate period prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or irregular heat on plaster areas near source.

When required, heat shall be furnished by . . . . .

.....  
Ventilation shall be provided to properly dry the plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open approximately 2" top and bottom (or side pivoted windows approximately 4") to provide air circulation; and, in enclosed areas or buildings lacking openings for natural ventilation by the use of temporary circulators or the air conditioning system.

If glazed sash are not in place and the building is subjected to hot, dry winds or temperature differentials from day to night of 20° F. or more, openings shall be screened with cheesecloth or similar material.

## III. GROUNDS

The minimum thickness of plaster over 16" x 48" gypsum lath, gypsum partition tile or fiber insulation lath, shall be 1/2"; over brick, clay tile or other masonry, it shall be 5/8" thick; over metal lath, the plaster thickness shall be 5/8" measured from the face of the lath; and 3/4" over long length gypsum lath. (A greater thickness in grounds may be required for certain fire ratings. See table, page 37, and specify accordingly.)

## IV. MATERIALS

**Base Coat Plaster** shall be (STRUCTO-LITE) (RED TOP Cement Plaster) (RED TOP Wood Fiber Plaster) (BONDCRETE) as manufactured by the United States Gypsum Company.

**Aggregate** (for cement plaster) (wood fiber over masonry) shall be (Sand) (Perlite) (Vermiculite) meeting the requirements of ASTM Designation C35-54T—"Inorganic Aggregate for use in Interior Plastering."

**Aggregate** for job mixed sand float finish shall be a graded silica sand all passing a (30 mesh) (20 mesh) screen.

**Water** shall be clean, fresh and suitable for domestic consumption.

For (Exterior Stucco Base) (Portland Cement-Lime plaster) the **Portland Cement** shall comply with A.S.T.M. Designation C150-47, the **Lime** shall be MORTASEAL as manufactured by the United States Gypsum Company, and the **Sand** shall be clean and sharp and shall meet the requirements of American Standards Association Specifications. A42-2.

**Finish Coat Plaster** shall be:

- a. Gypsum gauged lime putty trowel finish made from IVORY Pressure Hydrated Lime and (CHAMPION Gauging Plaster) (STAR Gauging Plaster) (RED TOP Gauging Plaster) as manufactured by the United States Gypsum Company.
- b. High strength gypsum gauged lime putty trowel finish made from IVORY Pressure Hydrated Lime and (STRUCTO-GAUGE) (RED TOP Quick Trowelling Keene's Cement) as manufactured by the United States Gypsum Company.
- c. RED TOP Gypsum Trowel Finish as manufactured by the United States Gypsum Company.
- d. RED TOP Gypsum Sand Float Finish as manufactured by the United States Gypsum Company.
- e. ORIENTAL Interior Colored Finish as manufactured by the United States Gypsum Company.
- f. A job mixed sand float finish made from IVORY Pressure Hydrated Lime, RED TOP Keene's Cement and silica sand.
- g. (SABINITE) (AUDICOTE) (Hi-Lite) Acoustical Plaster as manufactured by the United States Gypsum Company.
- h. Ornamental run mouldings and Cast enrichments made with RED TOP Moulding Plaster and USG Casting Plaster as required.
- i. Exterior finish coat shall be ORIENTAL Exterior Colored finish as manufactured by the United States Gypsum Company.

## V. SURFACE PREPARATION

- a. Monolithic concrete to which BONDCRETE is to be applied shall be cleaned of all dust, loose particles and other foreign matter. Laitance and efflorescence shall be removed by washing with a 10% solution of commercial muriatic acid and water, and then cleaning with water to remove all traces of acid. Grease and oil shall be completely removed. Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-

## PLASTERING SPECIFICATIONS—CONT.

hammered, or dash coated with portland cement grout composed of one part of cement and one and one-half parts of fine sand mixed to a mushy consistency. Using a stiff fiber brush, the portland cement grout shall be forcibly dashed on the concrete surface with a whipping motion. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to reduce suction.

- b. Unit masonry surfaces that exhibit high suction shall be moderately wetted immediately before plastering.
- c. Where RED TOP AUDICOTE acoustical plaster is specified for application direct to smooth monolithic concrete galvanized reinforcing bar chair legs shall be used on forms and use of nails or other raw steel in surface of concrete held to a minimum.

### VI. BASE COAT PROPORTIONS

- a. STRUCTO-LITE shall be regular formula for all lath bases and masonry formula for masonry bases.
- b. RED TOP Cement Plaster for the scratch or first coat over all lath bases in three-coat work shall be mixed in proportion of (one part of plaster to not more than two parts of sand by weight) (100 pounds of plaster to two cubic feet of perlite) (100 pounds of plaster to two cubic feet of vermiculite).

RED TOP Cement Plaster for all unit masonry surfaces and for the brown or second coat over lath bases shall be mixed in the proportion of (one part plaster to not more than three parts sand by weight) (100 pounds of plaster to three cubic feet of perlite) (100 pounds of plaster to three cubic feet of vermiculite).

RED TOP Cement Plaster, when mixed for two-coat work over gypsum lath, shall be mixed in the proportion of (one part of gypsum to not more than 2½ parts of sand by weight) (100 pounds of gypsum to not more than 2½ cubic feet of perlite) (100 pounds of gypsum to not more than 2½ cubic feet of vermiculite).

- c. RED TOP Wood Fiber Plaster. For application over all types of lath, shall be mixed with water only.

For masonry surfaces (except monolithic concrete), the scratch and brown coats of wood fiber plaster shall have (one part of sand by weight) (one cubic foot of perlite per 100 pounds) (one cubic foot of vermiculite per 100 pounds) added.

- d. BONDCRETE shall be mixed with clean water only.

### VII. GROUT

Grout for door bucks and flush metal base shall be (STRUCTO-LITE) RED TOP Cement Plaster and not more than 350 pounds sand) (2½ cubic feet of perlite) per bag of plaster.

### VIII. MIXING OF BASE COATS

For hand mixing, the mixing boxes shall be water-tight and thoroughly clean of all set or hardened material. All tools and equipment shall be cleaned after mixing each batch. Do not mix more material than can be used in one hour.

- a. STRUCTO-LITE shall be mixed with clean water only and hoed to uniform application consistency.

- b. RED TOP Cement Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end and thoroughly mixed to proper consistency.

- c. RED TOP Wood Fiber Plaster shall be mixed with clean water only and hoed to uniform application consistency. (For application over masonry aggregate shall be added and dry mixed prior to adding water.)

- d. BONDCRETE shall be mixed with clean water only and hoed to uniform application consistency.

For mechanical mixing, the mixer shall be cleaned of all set or hardened material before materials for a new batch are loaded. Each batch shall be mixed separately. Material that has partially set shall not be retempered or used. Mix no more material than can be used in one hour.

- a. For STRUCTO-LITE plaster, no aggregate shall be added. Put the approximate amount of water in the mixer and add the STRUCTO-LITE and mix to proper application consistency, adding water if necessary, and dump the entire batch and use.

- b. RED TOP Cement Plaster; put the approximate amount of water required in the mixer, then, while the mixer is in continuous operation, add approximately half the amount of aggregate required, add all of the plaster and add the remainder of the aggregate. Mix to proper application consistency, adding water if necessary, and dump the entire batch.

- c. For Gypsum Wood Fiber Plaster; add the approximate amount of water required. Then add the plaster and mix to proper application consistency. When sand is added for application over masonry bases, add the water, then the sand, and then add the plaster and mix to proper application consistency.

- d. For BONDCRETE Plaster, add clean water only, then add the plaster and mix to proper application consistency.

- e. For (Exterior Stucco) (Portland Cement-Lime plaster), the scratch (first coat) shall be mixed in the proportion of one bag of portland cement; two bags of MORTASEAL\* (or two cubic feet of lime putty) and seven and one-half cubic feet of sand (approximately 45 No. 2 shovels). For application over stucco mesh or self-furring metal lath, approximately two pounds of fiber or hair shall be added to each mix of the above proportions.

The brown coat (second coat) shall be mixed in the proportion of one bag of portland cement, two bags of MORTASEAL (or two cubic feet of lime putty) and nine cubic feet of sand (approximately 55 No. 2 shovels).

### IX. GROUTING

- a. All steel door bucks in 2" solid lath and plaster partitions shall be fully grouted prior to lathing, leaving a groove to receive the lath.

- b. All 2½" flush metal base for 2" solid lath and plaster partitions and furred exterior walls shall be grouted. (Provide a V-Groove to receive (ROCKLATH plaster base) (¾" Riblath). (Grout after channel studs are erected for channel stud metal lath partitions.)

\*Trademark Reg. U. S. Pat. Off.

## PLASTERING SPECIFICATIONS—CONT.

### X. BASE COAT APPLICATION

- a. For two coat work over gypsum lath and masonry, the base (first) coat shall be applied with sufficient material and pressure to form a good bond on the gypsum lath or masonry, as the case may be, and to cover well, and then be doubled back to bring the plaster out to grounds, straightened to a true surface with rod and darby, and left rough, ready to receive the finish (second) coat.
- b. For three coat work, the scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on metal lath, and a good bond on gypsum or fiber insulation lath, as the case may be, and to cover well, and then be cross scratched to a rough surface. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby and left rough, ready to receive the finish (third) coat.
- c. For 2" solid gypsum lath and plaster partitions, apply a scratch coat of plaster with a maximum 3 hour set, about  $\frac{3}{8}$ " thick, to each side of the lath. In no case, shall application of scratch coat to second side of lath be delayed longer than the setting time of the scratch coat applied to the first side. Scratch lightly in horizontal direction only.

After the scratch coats have set firmly and have partially dried (but not less than 16 hours), the brown coat shall be applied to the unbraced side, bringing it out to within  $\frac{1}{16}$ " of ground dimension for finish coat to bring overall partition thickness to 2 inches. When brown coat has set firmly (but not less than 3 hours), braces shall be carefully removed from opposite side and brown coat applied to that side in a manner similar to that described for the other brown coat.

- d. For 2" solid studless metal lath and plaster partitions apply scratch coat and allow it to set and partially dry. Then apply brown coat to side opposite braces, allowing it to set thoroughly before removing temporary braces. Next apply brown coat to previously braced side, bringing it out to sufficient grounds to make overall partition thickness 2" when finish coats are applied to both sides.
- e. For 2" channel stud, metal lath and plaster partitions apply scratch coat on lath side and allow it to set and partially dry. Then apply back-up coat on channel side applied to full grounds in not less than two operations and allow to set. Next apply brown coat on lath side bringing it out to sufficient thickness to make overall partition thickness 2" when finish coats are applied to both sides.
- f. For resilient ROCKLATH ceilings, three coat plaster work shall be used. Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to bring total thickness of plaster to  $\frac{7}{16}$ " over the lath, darby level and leave rough ready for finish coat.

- g. For (exterior wall furring) (hollow partitions) having long length ROCKLATH three coat plaster work shall be used to a total thickness of  $\frac{3}{4}$ " over the lath.
- h. For column fireproofing total thickness of plaster over lath face shall be ( $\frac{1}{2}$ " ( $\frac{5}{8}$ " ( $1$ " ( $1\frac{3}{8}$ " ( $1\frac{3}{4}$ "). Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to within  $\frac{1}{16}$ " of thickness required and leave level and rough ready for application of finish coat.
- i. Where plaster finish is flush with metal bases, bucks, window frames or similar constructions, both the brown coat and the finish coat should be grooved back at the intersection to reduce possibility of chipping of plaster at these points.
- j. At windows, doors and other openings all base coat plaster across head of opening and 12 inches down, each side, shall be cut free of buck, frame or grounds with edge of trowel, after stiffening but before setting, to allow for expansion.
- k. Scratch coat of (Exterior stucco) (Portland cement—Lime plaster) shall be applied in a full  $\frac{3}{8}$ " coat, with sufficient pressure to form a good bond with masonry surfaces or to force it through and completely embed the metal reinforcement. Cross scratch and, after set, damp cure for not less than 48 hours.  
Brown coat shall be applied over the dampened scratch coat in a full  $\frac{3}{8}$ " coat with sufficient pressure to form a good bond, rodde level and left rough, using a broom if necessary. After set, damp cure for at least 48 hours before applying the finish (third) coat.  
Damp curing of each coat shall be accomplished by applying water in a fine, fog spray. Apply only as much water as is readily absorbed. The frequency of spraying required will depend on the weather exposure, more frequent applications being required during hot, dry and windy weather.

### XI. PREPARATION OF LIME PUTTY

IVORY Finishing Lime shall be mixed with clean water only, using approximately  $5\frac{1}{2}$  to 6 gallons per bag. The putty may be prepared by overnight soak, or by mixing by hand or machine. Run mixer for sufficient time to get a smooth, thoroughly mixed putty which can be used immediately or run into a box for use as required. When stored in a box after mixing, do not permit putty to get crusty or to dry out. Mixer, tools and equipment must be clean.

### XII. PROPORTIONS OF FINISH COATS

- a. Gypsum gauged lime putty finish shall be mixed in the proportions of 100 pounds of gauging plaster to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty).
- b. Medium hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the proportion of 100 pounds of (Structo-Gauge) to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty).

## PLASTERING SPECIFICATIONS—CONT.

- c. Hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the proportion of 100 pounds of STRUCTO-GAUGE to 100 pounds of dry lime (200 pounds, or 17 gallons, of lime putty).
- d. Medium hard Keene's Cement-Lime Putty Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry lime (100 pounds, or 8½ gallons of lime putty).
- e. Hard Keene's Cement-Lime Putty Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 25 pounds of dry lime (50 pounds, or 4¼ gallons of lime putty).
- f. Keene's Cement-Sand Float Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry lime and 400 pounds of sand (100 pounds, or 8½ gallons of lime putty) and 4 to 5 cubic feet of sand (27 No. 2 shovels of sand).
- g. RED TOP Gypsum Trowel Finish shall be mixed with clean water only to proper application consistency.
- h. RED TOP Sand Float Finish shall be mixed with clean water only to proper application consistency.
- i. ORIENTAL Interior Colored Finish shall be mixed with clean water only to proper application consistency.
- j. ORIENTAL Exterior Colored Finish shall be mixed with clean water only to proper application consistency.

### XIII. APPLICATION OF FINISH COATS

Finish coat shall be applied over a partially dry, level and roughened gypsum base coat.

The finish coat shall be scratched in thoroughly and immediately doubled back to fill out to a true, even surface. Thickness to be 1/16" to 1/8". (Except Acoustical Plaster which shall be 1/2" thick.)

- a. Trowel finishes shall be water troweled during set to provide a smooth, dense surface for decoration, free of irregularities and blemishes.
- b. Float finishes shall be floated with shingle, wood, carpet or rubber float to bring aggregate to the surface and produce a finish free of slick spots, cat faces, and other blemishes. In natural color finishes, use water sparingly while floating. Do not use water while floating colored finishes.
- c. Textures shall be applied in such a manner that they will match the sample approved by the architect.

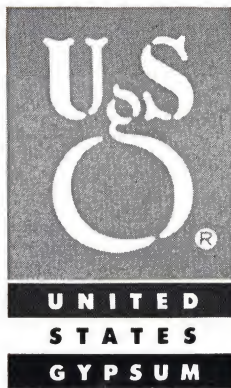
- d. SABINITE Acoustical Plaster finish shall be applied according to manufacturer's directions which are hereby made a part of this specification.
- e. HI-LITE Acoustical Plaster finish shall be applied according to manufacturer's directions, which are hereby made a part of this specification.
- f. RED TOP AUDICOTE Acoustical Plaster finish shall be applied according to manufacturer's directions which are hereby made a part of this specification.
- g. Ornamental plaster shall be executed in accordance with the full-sized details shown on the drawings. Cornices and moldings shall be run full, straight and true with molding plaster, using clean cut metal templates conforming to the profiles shown on the drawings. Lines shall be in alignment, with true intersections, and accurate mitres at corners and angles. Enriched ornamental work which cannot be run in place shall be cast with casting plaster in gelatine molds. The work shall be solidly backed with jute or burlap, shall be properly reinforced with galvanized iron, and shall be securely stuck and wired in place with copper wires not lighter than 16 gauge. All joints shall be carefully made and neatly pointed so as to be invisible. All rough spots shall be eliminated with fine sandpaper, and the entire work left in proper condition, ready for decoration.
- h. ORIENTAL Exterior colored finish shall be mixed and applied in strict accordance with the manufacturer's directions. Color and texture to be designated and approved by the architect or his representative.

### XIV. PATCHING

Point up around trim and other work. Cut out and patch defective and damaged plaster. Patching of plaster shall match existing work in texture and finish and joinings with plaster previously applied shall finish flush and smooth.

### XV. COMPLETION

At the completion of the finish plaster work, clean all plaster from beads, screeds, metal base and metal trim, leaving work ready for decoration by others. Remove all plaster rubbish from the building, leaving floors broom clean. Remove excess material from the job site. Remove all scaffolding, tools and other equipment from the building and job site.



**TECHNICAL INFORMATION**

# SHEETROCK\*

## **GYPSUM WALLBOARD**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# SHEETROCK\* GYPSUM WALLBOARD

## DESCRIPTION

SHEETROCK is a mill fabricated gypsum wallboard composed essentially of a fireproof gypsum core encased in a heavy manila-finished paper on the face side and a strong liner paper on the back side. The face paper is folded around the long edges to reinforce and protect the core, and the ends are square cut and smoothly finished. The joints between adjacent boards may be reinforced and concealed with the PERF-A-TAPE\* Joint System, or may be featured by leaving exposed or covering with a decorative moulding.

Without the addition of plaster, SHEETROCK wallboard furnishes to interior walls and ceilings a durable surface suitable for any type of decorative treatment, and permits repeated redecoration during the life of the building.

## FUNCTION AND UTILITY

SHEETROCK wallboard provides the following features:

**Dry Walls.** Mill fabricated boards eliminate excessive moisture in construction.

**Fireproof.** The gypsum core will not support combustion or transmit temperatures greatly in excess of 212° F. until completely calcined,—a slow process. See technical data for Fire Resistance Ratings.

**Crack Resistance.** "Welded" together by the PERF-A-TAPE\* Joint System, SHEETROCK wallboard forms walls and ceilings exceptionally resistant to cracks caused by frame movement, vibration, or minor settlement.

**Speed.** Mill fabricated boards are easily cut and quickly applied.

**Quick Decoration.** Essentially a "dry" material, SHEETROCK wallboard permits painting or other decoration, and the installation of metal or wood trim, almost immediately.

**Non-Warping.** Expansion or contraction under normal atmospheric changes is negligible and does not cause warping or buckling.

## GENERAL LIMITATIONS OF USE

1. Not recommended where exposure to moisture is extreme or continuous.
2. Must be adequately protected against wetting when used as a base for tile. For such use see page 9.
3. Maximum Spacing of Framing Members:  $\frac{1}{2}$ " SHEETROCK wallboard is designed for use on framing centers from 16" to 24";  $\frac{3}{8}$ " and  $\frac{1}{4}$ " SHEETROCK, on centers up to 16". SHEETROCK wallboard used on 24" centers on ceilings must be applied across framing members and joints reinforced. When so applied, the use of headers behind butt joints is not required. 24" spacing is not recommended for ceilings carrying insulation fill.
4. Application of SHEETROCK over  $\frac{3}{4}$ " wood furring applied across framing is not recommended since the relative flexibility of the furring under impact of the hammer tends to loosen nails already driven.

## STANDARD SPECIFICATIONS

SHEETROCK wallboard complies with the following Standard Specifications for Gypsum Wallboard: Federal Specification SS-W-51a. American Society for Testing Materials Specification ASTM C36-52.

# SHEETROCK WALLBOARD PRODUCTS

## TAPERED EDGE SHEETROCK

The long edges are tapered on the face side to form a shallow channel for the joint reinforcement, providing smooth, continuous wall and ceiling surfaces. The Ivory colored face paper is suitable for any type of decoration. Tapered Edge is a marked improvement over, and has supplanted, recessed edge formation. Made in two thicknesses:

**One-Half Inch.**  $\frac{1}{2}$ " Tapered Edge SHEETROCK is recommended for single layer use in new residential construction, with all joints reinforced and concealed with the PERF-A-TAPE Joint System. The greater thickness provides increased resistance to fire exposure and to the transmission of sound.

**Three-Eighths Inch.** Differs from  $\frac{1}{2}$ " Tapered Edge SHEETROCK only in thickness and weight; it is used principally in repair and remodel work.

Sizes: Tapered Edge SHEETROCK is 4' wide by 6', 7', 8', 9', 10', or 12' long.

## SHEETROCK FIRECODE 60 and FIRECODE 45

$\frac{5}{8}$ " SHEETROCK Firecode 60 and  $\frac{1}{2}$ " SHEETROCK Firecode 45 are gypsum wallboards which combine all the advantages of regular SHEETROCK with increased resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

By Underwriters' Laboratories tests, SHEETROCK Firecode 60 and SHEETROCK Firecode 45 afford 60 minute and 45 minute fire resistance ratings, respectively, when used in certain partition and floor and ceiling constructions.

Firecode SHEETROCK products are made with Tapered Edges only.

Sizes: 4' wide by 6', 7', 8', 9', 10', or 12' long.

"USG," "SHEETROCK," "ROCKLATH," "PERF-A-TAPE," "BAXBORD," "PERF-A-BEAD," "DUR-A-BEAD," "PERF-A-TRIM" and "TEXOLITE," are trademarks owned and/or registered by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHEETROCK" and "BAXBORD" identify the particular gypsum wallboards, "PERF-A-TAPE" identifies the particular joint sealing tape and "TEXOLITE" identifies the particular interior paint manufactured only by United States Gypsum.

\*Trademark Reg. U. S. Pat. Off.

# SHEETROCK WALLBOARD PRODUCTS, Cont.

## Limitations of Use

1. Same as General Limitations, page 2.
2. In order to attain the 1 hour and the 45 minute fire resistance ratings, the construction of the partition and/or floor and ceiling assemblies must be in accordance with the respective Underwriters' Laboratories, Inc., panel designs. See Technical Data, for description of panel constructions.
3. Maximum Spacing of Framing Members: 16" o.c. where fire rating required, otherwise 24".
4. Not recommended where exposure to moisture is extreme or continuous.

## INSULATING SHEETROCK

Insulating SHEETROCK wallboard is made by laminating a sheet of bright aluminum foil on the back surface of regular SHEETROCK.

Sizes: 4' wide by 6', 7', 8', 9', 10', or 12' long.

**Insulation.** The bright metal foil has the property of reducing heat flow out of the home in the winter, and into the home in the summer. The thermal insulating value of an air space faced with Insulating SHEETROCK, properly applied in a wall, is equivalent to that of  $\frac{1}{2}$ " fiber insulating board. On ceilings, in summer, it is equivalent to approximately 2" thickness of fiber insulating board. See Technical Data, for thermal coefficients.

**Vapor Barrier.** Insulating SHEETROCK provides an efficient vapor barrier which resists the passage of moisture vapor through the interior lining of exterior walls, and minimizes the possibility of condensation within the wall, and of consequent failure of the exterior paint film. See Technical Data for complete discussion and Vapor Permeability figures.

## Limitations of Use

1. Same as General Limitations, page 2.
2. Do not use as a base for tile.

## BEVELED EDGE SHEETROCK

The long edges are precision beveled on the face side at the mill. Where featured rather than concealed joints are desired, Beveled Edge SHEETROCK provides an interesting "V" joint pattern between boards. The board should be erected according to a pre-determined layout so that all joints in the room form a pleasing pattern. Since all joints must fall on framing members, they must be placed accordingly.

Sizes:  $\frac{3}{8}$ " thickness only, by 4' wide by 6', 7', 8', 9', 10', or 12' long.

## SQUARE EDGE SHEETROCK

Primarily used for temporary or industrial construction, Square Edge SHEETROCK is made in  $\frac{1}{2}$ ",  $\frac{3}{8}$ ", and  $\frac{1}{4}$ " thicknesses for use with batten strips or other decorative joint treatment.

Sizes: Square Edge SHEETROCK is 4' wide by 6', 7', 8', 9', 10', or 12' long.

**Quarter-Inch.** A lightweight, low cost, utility gypsum wallboard, made only with square edges, and easily erected over old wall and ceiling surfaces.

\*Trademark Reg. U. S. Pat. Off.

## WOODGRAINED SHEETROCK

A special paper, printed with photographic reproductions of carefully selected Knotty Pipe, Walnut, and Bleached Mahogany panels, is laminated to the face of regular SHEETROCK wallboard to produce a board having all the regular advantages, except reinforced joints, plus the economy of uniquely realistic appearing wood-grained predecoration. The factory finish may be further treated by applying either paste wax or satin finish varnish.

Standard in  $\frac{3}{8}$ " thickness with beveled edges for Bleached Mahogany finish, and square edges for Knotty Pine and Planked Walnut finishes. Colored nails used for inconspicuous nailing. All joints must fall on framing members.

Sizes: 4' wide by 6', 7', 8', 9', 10', or 12' long.

## BAXBORD\*

Designed for use as a base layer for job-laminated Double-Wall SHEETROCK Wallboard and Panel SHEETROCK constructions, BAXBORD is a low-cost, easy-to-handle gypsum board encased on both sides in strong paper.

Size:  $\frac{3}{8}$ " x 2' x 8', Square Edge.

## PANEL SHEETROCK

Panel SHEETROCK products have the same core composition as regular SHEETROCK Wallboard, and differ only in width and edge formation. They are made in 16" widths only, lengths 8', 9', or 10' with long edges rounded, and in the following three finishes:

**Plain Panel SHEETROCK.** Face surface is highly calendered manila paper suitable for any type of decorative treatment.

**Knotty Pine Panel SHEETROCK.** Face surface is high quality paper on which an accurate photographic reproduction of selected random width knotty pine is printed in color.

**Striated Panel SHEETROCK.** Face surface is a handsome pattern of lengthwise striations of varied widths and depths, predecorated in a neutral tone to accentuate the pattern.

## Functional and Utility

**Attractive Panel Joints.** The 16" wide round edge units are butted together to feature the joint, making a pleasing panel effect. No further treatment of the joint is necessary.

**Ease of Handling.** Only 16" wide, it is easy to carry into buildings and up narrow or turning stairs, to finish "hard to get at" attic or basement spaces.

**Quick, Easy Erection.** Can be nailed direct to studs or adhesively applied to new or existing surfaces. Experience and skill unnecessary.

If Adhesively applied; face nails unnecessary except to hold occasional panels to an unusually uneven base, or on sloping surfaces.

## Limitations of Use

Same as for SHEETROCK Gypsum Wallboard, see page 2.

# SHEETROCK WALLBOARD ACCESSORY PRODUCTS

## PERF-A-TAPE Joint Treatment Products

PERF-A-TAPE Cements are used to bond reinforcing tapes and to conceal joints between panels of gypsum wallboard.

### DESCRIPTION

PERF-A-TAPE Joint Cement is a dual purpose powder cement to be mixed with water on the job to a workable consistency. It is specially formulated to bond joint reinforcing tape to gypsum wallboards. It may also be used for concealing reinforcing tape and nail heads.

PERF-A-TAPE Topping Cement is a specially formulated powder cement to be mixed with water on the job. It is specially formulated to conceal the reinforcing tape and nail heads.

### FUNCTION AND UTILITY

#### PERF-A-TAPE Cement

Low alkalinity, minimizes joint discoloration, maximum bond, great edge crack resistance, minimum shrinkage.

#### Topping Cement

Low alkalinity, smooth texture, easy working and sanding qualities.

## PERF-A-TAPE Joint Reinforcing Tape

PERF-A-TAPE is used to reinforce joints between gypsum wallboard panels.

### Description

A special cross fibered paper tape having an average cross tensile strength of approximately 45 pounds per lineal inch, it is spark perforated to permit the passage of air, thereby reducing the possibility of blisters.

### Limitations of Use

These products are not designed to join wood or wood fibered products; must be adequately protected against wetting.

### Package Data

PERF-A-TAPE Cement and PERF-A-TAPE Topping Cement are packaged in 25 pound bags.

PERF-A-TAPE available in 250' and 500' rolls.

PERF-A-TAPE Joint System package contains 250' roll of PERF-A-TAPE and 18 pounds of PERF-A-TAPE Cement (bonding type).

## DUR-A-BEAD Corner Reinforcement

A strong, easy-to-erect all metal corner reinforcement that provides an economical exterior corner for those applicators who prefer nail-on application.

PERF-A-TAPE Cement is used to fill and finish DUR-A-BEAD to produce true, impact-resistant exterior angles.

Lengths: 6'8", 8', 10'.

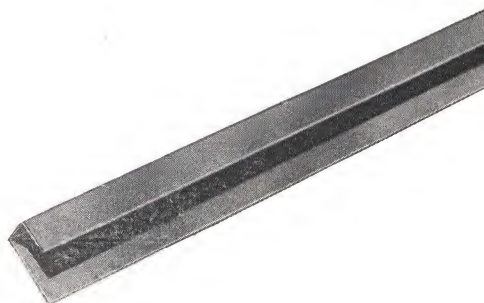
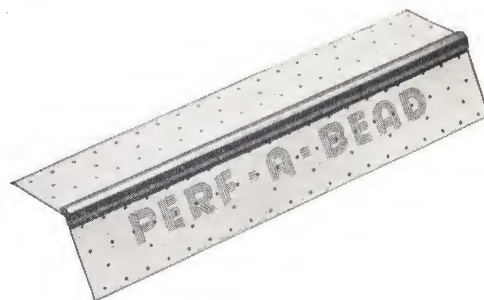
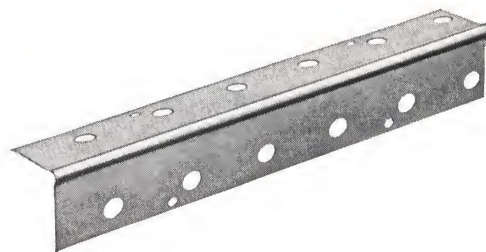
## PERF-A-BEAD\* Corner Reinforcement

A metal corner formed of electro-galvanized steel with PERF-A-TAPE wings, PERF-A-BEAD provides enduring metal protection for outside corners in gypsum wallboard construction. It eliminates wood corner moldings and provides a true corner that takes any decoration. It is applied with PERF-A-TAPE Cement, and can be used in new construction, remodel and alteration work, or in old work during redecoration. PERF-A-BEAD reinforces outside corner angles, uncased openings, pilasters, beams, ledges, and soffits.

## USG METAL TRIM

An electro-galvanized, smoothly finished steel channel for use as edge protection and trim around door and window openings, and as a molding at ceiling angles in single layer gypsum wallboard construction. Available either plain or painted to harmonize with predecorated wallboard, it is an economical utility trim which is especially suited for remodel work,—particularly when PANEL SHEETROCK is used.

Size:  $\frac{3}{8}$ " and  $\frac{1}{2}$ " thicknesses.



\*Trademark Reg. U. S. Pat. Off.

# SHEETROCK WALLBOARD ACCESSORY PRODUCTS

## PERF-A-TRIM

An electro-galvanized steel channel with PERF-A-TAPE flange attached, designed for use as a casing around door and window openings and at ceiling angles. Suitable for single layer or double-wall gypsum wallboard construction, PERF-A-TRIM is embedded with joint cement to produce a flush, inconspicuous edge reinforcement, and is bonderized for easy painting.

Size:  $\frac{3}{8}$ " and  $\frac{1}{2}$ " thicknesses.

## PERF-A-TAPE PIPE COLLARS

Circular PERF-A-TAPE washers applied with PERF-A-TAPE cement and used to conceal and finish the ragged edges of holes made in gypsum wallboard for pipe outlets.

Sizes to fit  $\frac{1}{2}$ " and  $1\frac{1}{2}$ " inside diameter pipe.

## USG SNAP-ON TRIM

USG SNAP-ON TRIM is a metal moulding especially designed and formed to trim around door and window openings where wood jambs and wallboard surfaces are used. The use of this trim results in a graceful bullnose return as shown by the cross section drawing. Wood frames are kerfed by mill work supplier.

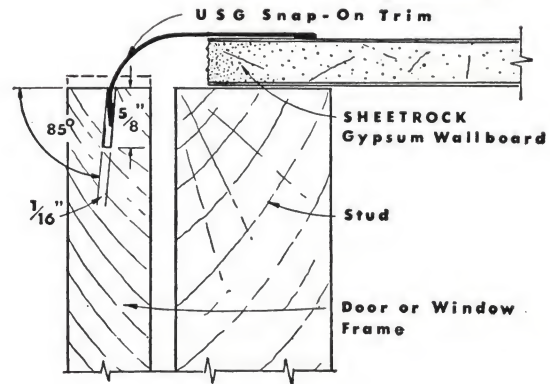
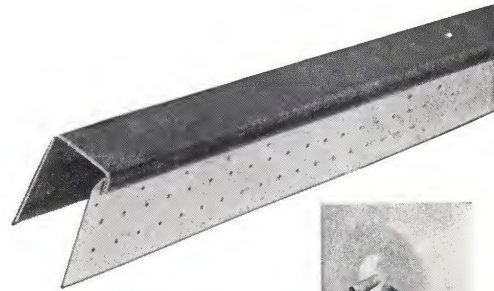
### Function and Utility

**Economical**—Reduces labor costs up to 50%—Material delivered to job with side sections coped—Make only rough cuts on job—Skilled finishing labor not required—Members quickly applied—They snap in place.

**Durable**—Metal nose resists abuse.

**Tight Fitting**—No gap between metal trim and wood frame—Spring action assures contact with wallboard surface—Projects less than  $\frac{3}{32}$ " from surface, eliminating heavy dust-catching ledges over doors.

**Simplifies Wallboard Application**—Trim fits over wallboard after wallboard is installed—No openings to work away from or trim to work to.



Scale:  $\frac{1}{2}$ " = 1'

For  $\frac{5}{8}$ " SHEETROCK Firecode 60—Increase width of frame  $\frac{1}{4}$ " for doors— $\frac{1}{8}$ " for windows, as shown by dotted line above.

**Bonderized Finish**—The metal trim is bonderized to protect against rusting and to provide suitable base for paints.

**No Nails Required**—Positive locking spring action holds trim permanently—No finish nail holes to putty.

### Sizes

**Package A**—Consists of 12 pieces 7' long with *right hand miter* one end, 12 pieces 7' long with *left hand miter* one end and 12 headpieces 3'-6" with square ends.

**Package B**—Consists of 30 pieces 10' long mitered both ends.

**Special Sizes**—Special lengths available upon inquiry.

# SHEETROCK WALLBOARD SYSTEMS

## SINGLE LAYER SYSTEM

SHEETROCK is usually applied directly over wood framing members, applying ceilings first, then walls. Boards should be accurately cut to fit and joints loosely butted, not forced into place. End joints should be staggered. Insulating SHEETROCK is applied with the foil side against the framing.

The application of SHEETROCK over  $\frac{3}{4}$ " wood furring strips applied across studs or joists is not recommended, since the comparative flexibility of the furring under the impact of the hammer tends to loosen nails already driven. SHEETROCK may be applied on furring strips in-

stalled over a solid backing, such as an existing wall surface.

Nails (see nail specification page 00) should be spaced 5" to 7" apart on ceilings, and 6" to 8" apart on walls; nailing should progress from the center of the board towards edges and ends. During nailing, the board should be pressed firmly against the framing.

SHEETROCK wallboard may be applied either vertically, with long edges parallel to framing members, or horizontally, with long edges at right angles to framing. Horizontal application is the method generally recommended for walls over 4' wide and under 8'0" high.

# SHEETROCK WALLBOARD SYSTEMS, Cont.

## Advantages of Horizontal Application:

1. Reduces necessary joint treatment footage up to 25 per cent.
2. Strongest dimension of board runs across framing members.
3. Bridges irregularities in alignment and spacing of fram-

ing members.

4. Eliminates need for headers.
5. Better bracing continuity—each board ties more framing members together.
6. Joints on walls are at a convenient height for the finishing operation.

## BACK-BLOCKING SYSTEM

### DESCRIPTION

Back-Blocking was designed by U. S. Gypsum Company to minimize the condition known as "ridging." The Back-Blocking system, Research approved, has been extensively field tested and produces outstanding results.

Back-Blocking consists of laminating cut-to-size pieces of SHEETROCK Wallboard to the back surface of the wallboard directly over the joints providing reinforcement to neutralize stresses which cause ridging.

### RIDGING DEFINED

Ridging is a joint deformity which occasionally occurs under a certain combination of critical climatic condi-

tions of cold and dampness. Ridging appears as a uniform, continuous and fine ridge-like pattern on the center of and along the length of some finished joints.

The degree of ridge development depends upon the severity of causing conditions. Building under adverse conditions and at an increased tempo has its effect upon over-all joint finishing particularly with respect to the frequent occurrence of ridging.

### RECOMMENDATION

We recommend Back-Blocking all ceiling joints along tapered edges and floating and Back-Blocking all end joints, side walls and ceilings. End joints, side walls and ceilings may be tapered at the discretion of the owner, architect, contractor or applicator.



### Floating and Back-Blocking End Joints—Side Walls

One wallboard panel is positioned and nailed into place over the side wall blocking strip of SHEETROCK which is held in place by SHEETROCK stopping strips tacked to the studs. The block extends approximately 4" up behind upper course of wallboard. Adjacent panel is put into place, loosely butted to the preceding wallboard panel and nailed to the studs bringing the back of the face board into contact with PERF-A-TAPE Cement spread on the block. Note end joint falls between studs.



### Tapering Floated and Back-Blocked End Joints

The end joints are tapered as shown in photograph and described. The strips of wood shown are pieces of  $\frac{3}{8}$ " x  $1\frac{1}{2}$ " oak flooring. The horizontal strips are loosely nailed with double headed nails to underlying supports. The vertical piece, approximately 54" long, is centered over the joint and underneath the horizontal pieces. The double headed nails are then driven tight causing an inward pressure on vertical strip aligning and depressing the adjoining ends of the face boards. After 24 hours strips are removed leaving a slight depression at the joint similar to joining tapered edges.

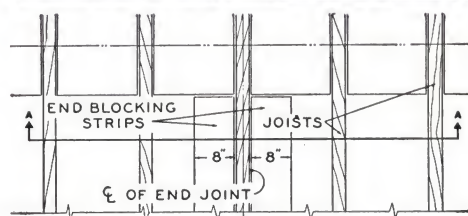
# SHEETROCK WALLBOARD SYSTEMS, Cont.

## Back-Blocking Ceiling Joints

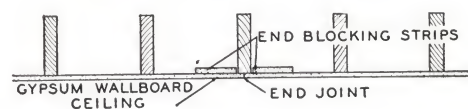
Gypsum wallboard must be applied with the long edges at right angles to the joists, end joints between joists. SHEETROCK blocks (10" x 14") spread with PERF-A-TAPE Cement are placed prior to erection of succeeding board. Same size blocks are used for edges and ends. Immediately after all blocks are in place the next board, previously cut, is erected as shown. Slightly over half of the width of the blocks is resting on the ceiling board, before next wallboard panel is erected. Note cement ridges perpendicular to joint. The next board will be positioned and nailed as soon as the end joint is blocked. The procedure for tapering ceiling end joints is the same as described for side walls. Nails, nail spacing and nailing practices are the same as for conventional single layer gypsum wallboard construction.

## Back-Blocking End Joints Which Are Centered on Joists—

As shown at right, end joints may be successfully back-blocked without floating the joint between the joists. In this method the ends of the board are nailed to the joist in the conventional manner. Then the 8-inch wide back-blocking strip, with adhesive applied, is placed on top of the ceiling board as shown. This system is effective in minimizing ridging. However, it does not have the advantage of compensating for twisted joists as does the floating method.



CEILING PLAN — FROM ABOVE



VERTICAL SEC. A - A

## DOUBLE WALL SYSTEM USING SHEETROCK DESCRIPTION

The Double Wall System using SHEETROCK consists of a base layer of  $\frac{3}{8}$ " BAXBORD applied at right angles to the studs and joists, with end joints staggered or of a base layer of  $\frac{3}{8}$ " SHEETROCK and a face layer of  $\frac{3}{8}$ " SHEETROCK adhesively attached thereon with PERF-A-TAPE Cement. All Joints between the two layers are to be offset at least 10", and joinings between the boards of the face layer are reinforced and concealed by the PERF-A-TAPE Joint System in the conventional manner. The resulting wall and ceiling construction has many advantages over single layer gypsum wallboard construction.

## FUNCTION AND UTILITY

A Double Wall of SHEETROCK provides the following features in addition to the regular advantages of gypsum wallboard:

**Increased Fire Resistance.** Two layers of SHEETROCK with its incombustible core provide a higher degree of fire protection. See Technical Data for Fire Rating.

**Reduced Sound Transmission.** Quieter homes are assured by the greater mass of the Double Wall System.

**Strength.** Lamination of two thicknesses of gypsum board utilizes the maximum strength of the board and provides rugged walls to withstand stress and abuse.

**Crack-Resistance.** Joints between SHEETROCK panels are "welded" together by the PERF-A-TAPE Joint System to provide high resistance to cracks caused by frame movement, vibration, or settlement. Elimination of nails in the face layer of SHEETROCK greatly reduces transfer of stress to finished surfaces and minimizes possibility of nail "popping" or of nailhead area discoloration.

## Double Wall Nail Data

Type required	4d cooler type
Spacing-first layer ceilings	6" o.c.
Spacing-first layer walls	8" o.c.
Spacing-face layer ceilings (temp)	12" o.c.
Spacing-face layer walls (temp)	16"-24" o.c.

**Note:** Where one hour Fire Resistance Ratings are required, refer to applicable notes following fire resistance rating table on page 10.

# SHEETROCK WALLBOARD SYSTEMS, Cont.

## PANEL SHEETROCK SYSTEM

The Panel SHEETROCK System consists of either (a) the direct attachment by nails to studs or (b) adhesively applied to resurface unsightly walls.

### DESCRIPTION

#### Nail-on Application

The vertical edges of Panel SHEETROCK must be reasonably centered on the underlying framing member. The width of individual panels will sometimes vary sufficiently from 16" wide to make it impractical to attempt to center the edges on studs or framing members previously spaced exactly 16" O.C. The studs should be erected just ahead of the Panel SHEETROCK, progressing not more than two stud spaces ahead of the actual application of the panel board. If the studs have been previously erected and edges of Panel SHEETROCK Wallboard tend to occur off center enough to make nailing impossible, 1" x 2" furring strips may be nailed to the sides of the studs to provide additional nailing surface.

Nailing to studs—use 4d 1 $\frac{3}{8}$ " head 14 ga. flat head nail spaced 12" o.c. Plain Panel SHEETROCK nailed to 1" x 3" wood furring strips applied vertically—use 2d 1" long nail spaced 8" o.c. Knotty Pine or Striated Panels nailed to studs or furring strips—use matching colored nails spaced 12" o.c. All nails are driven *at right angle to board*.

#### Adhesive Application

Adhesive application is accomplished by spreading 3 lengthwise ribbons of PERF-A-TAPE Joint Cement upon the back surface of the panels. Panels are applied vertically over new or old reasonably sound and clean surfaces.

### FUNCTION AND UTILITY

Featured joints provide pleasing paneled effect. No further treatment of the joint is necessary. Light weight, easy to handle panels provide quick erection in "hard to get at" places. Ideal for new construction for "accent" wall or walls. Practical for remodeling—to cover unsightly surfaces. Fits any modern decor.

## RADIANT HEATING SYSTEM

### SHEETROCK GYPSUM WALLBOARD

During recent years the use of radiant heating systems has become more prevalent in building construction. When SHEETROCK wallboard is to be used on ceilings having radiant heating, the following recommendations will help to ensure best results:

### DESIGN

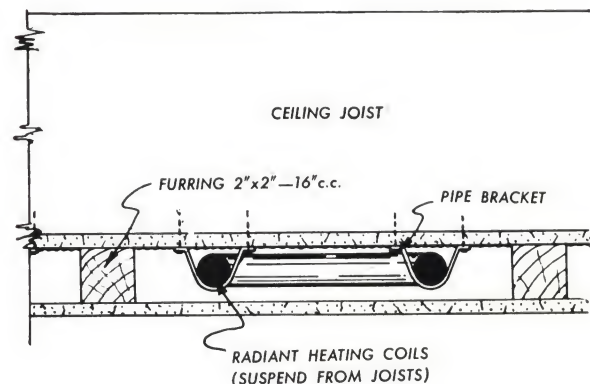
1. The maximum surface temperature of the SHEETROCK must not exceed 115° F

### APPLICATION

1. Apply Insulating SHEETROCK parallel to the joists with the aluminum foil facing downward, as a reflector behind the heating coils.

2. Nail 2" x 2" furring strips 16" o.c. over the Insulating SHEETROCK and at right angles to the joists. Wood must be dry and thoroughly seasoned to avoid movement of green lumber in the heated space.

3. Suspend heating coils from the joists, never from the SHEETROCK alone. Coils should run at right angles to the joists.



4. Use only that thickness of SHEETROCK on which the Heating Engineer has based his design. For example, do not substitute  $\frac{3}{8}$ " SHEETROCK for the face layer when the design calls for and is based on  $\frac{1}{2}$ " SHEETROCK.

5. Apply a coat of flat black paint on the back of the face layer of regular SHEETROCK, to increase the efficiency of the system. Apply the face layer in the normal manner, at right angles to the furring strips.

6. Do not operate radiant heating system until after taping and finishing of ceiling joints are completed and cement has thoroughly dried.

# SHEETROCK WALLBOARD SYSTEMS, Cont.

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## SHEETROCK AS A BASE FOR CERAMIC OR OTHER TILE (*Adhesive Application*)

If the SHEETROCK Wallboard is adequately protected from water by the tile and adhesives, there should be no difficulty. As a general rule, the following precautions will help prevent failures:

1. Cut edges of SHEETROCK should not be used at the intersection of wall and tub. Paper-bound edges should come at this point, and two coats of varnish† should be applied to the bottom edge of the SHEETROCK and should be carried up at least 4" or the edge (cut or paper bound) of the SHEETROCK may be protected from contact with moisture by USG Metal Trim of appropriate size. Prior to inserting the SHEETROCK into the channel, the channel should be partially but continuously filled with a suitable caulking material, the SHEETROCK then inserted and the excess caulking which was squeezed out, removed.
2. Two coats of varnish should be applied to the core and paper at cut-outs for shower head, pipe and valve adjustments.
3. If tile is used, it should be installed by a reputable contractor using first class materials.

4. The tile should be carried at least 6" above the shower head.

5. If the use of varnish† does not conflict with the tile application specifications, the entire face of the board to be tiled should receive two coats of varnish.

6. The space between the SHEETROCK and tub should be filled with a non-setting type of caulking prior to the tile application. To facilitate this, the bottom edge of the SHEETROCK should be set about 1/4" above the lip of the tub. Upon completion of tile installation, the space between tub and tile should be grouted similar to the balance of the installation.

7. Ceramic tiles should not be applied over 3/8" SHEETROCK attached only to studs 16" o.c., but should be further supported by attachment to headers placed between studs a few inches above tub line and at dado cap or mid-ceiling height. The use of 1/2" SHEETROCK Wallboard on 16" o.c. framing does not require such added support. Use standard nails and nailing

†An application of other waterproofing agents can be substituted for varnish provided it is compatible with the mastic used to secure the tile and with the SHEETROCK. Water-proofing mastics can be similarly employed.

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## Suggestions for best results in decorating SHEETROCK Wallboard

### PREPARATION AND APPLICATION

SHEETROCK walls, like those of any other material, must be properly prepared for decoration. The following general suggestions will help to ensure best results.

#### Painted Finishes

The use of joint treatments in dry-wall construction introduces painting problems which must be recognized. The surface texture of the wallboard and its paint absorbing characteristics (suction) differ from that of the surfaces finished with joint cement. If not properly primed, the smoother, high-suction surfaces of the joint cement may show up either as highlight areas or as "shadow" appearances under many paint finishes.

For this reason, gypsum wallboard surfaces must be properly primed and sealed before painting. For best results select a prime coat material such as SHEETROCK Sealer the use of which results in a uniform texture and suction throughout the wall surface.

\*Trademark Reg. U. S. Pat. Off.

### Wallpaper and Wall Fabric Finishes

SHEETROCK Sealer, or one coat of high-gloss varnish cut 25% with turpentine, properly prepares SHEETROCK wallboard for wallpapering, and should always be used. Unless a suitable size is applied prior to papering, an undue softening of the face paper of SHEETROCK may result when old wallpaper is soaked or steamed from walls and ceilings before re-papering.

Refer to U S G Technical Literature on TEXOLITE\* Paint Products, AIA File Number 25-B, for detailed painting specifications.

# SHEETROCK WALLBOARD TECHNICAL DATA

## FIRE RESISTANCE RATINGS FOR SHEETROCK WALLBOARD

(Tests conducted in recognized laboratories according to ASTM Specifications.) (Copies available on Request)

FACING	RATING	REFERENCE
<b>PARTITIONS (a)</b>		
3/8" SHEETROCK	25 Minutes	(1)
1/2" SHEETROCK	40 Minutes	(1)
1/2" SHEETROCK, mineral wool batts nailed to studs.	1 Hour	(1)
1/2" SHEETROCK, loose mineral wool fill. Non-Bearing.	1 Hour	(1)
1/2" SHEETROCK Firecode 45	45 Minutes	(2)
5/8" SHEETROCK Firecode 60	1 Hour	(2)
2 layers 3/8" SHEETROCK	1 Hour	(3)
2 layers 1/2" SHEETROCK Non-Bearing	1 1/2 Hours	(4)
2 layers 5/8" SHEETROCK Firecode 60	2 Hours	(2)
<b>CEILINGS (b)</b>		
1/2" SHEETROCK (Nailed to joists with 1 3/4", No. 12 ga. nails, having 1/2" heads.)	25 Minutes	(1)
1/2" SHEETROCK Firecode 45	45 Minutes	(2)
5/8" SHEETROCK Firecode 60	1 Hour	(2)
2 layers 3/8" SHEETROCK	30 Minutes	(1)
2 layers 1/2" SHEETROCK	1 Hour	(5)
<b>CEILINGS (c)</b>		
5/8" SHEETROCK Firecode 60	1 Hour	(2)
<b>COLUMNS (d)</b>		
4 layers 1/2" SHEETROCK	2 1/2 Hours	(6)
3 layers 1/2" SHEETROCK	1 1/2 Hours	(7)
2 layers 1/2" SHEETROCK	1 Hour	(8)

a. Wood studs faced both sides as indicated. Ratings apply on both Bearing and Non-Bearing partitions, except as shown.

b. Wood joists faced with rough and finish floor, and on the under side as indicated.

c. Open web steel joist-concrete floor construction faced as indicated. Joints taped or untaped.

d. Steel Columns.

1. National Bureau of Standards Publication B.M.S. 92, tables 30 and 42.

2. Underwriters' Laboratories, Inc.

3. Nationally recognized Fire Testing Laboratory—name and special details on request.

4. National Bureau of Standards Reference No. FP 2708, not published. (Construction: First layer applied vertically with 5d, 13 1/2 ga., 1 5/8" long, 1/32" diam. head, cement-coated nails spaced 6" to 8" o.c. Finish layer applied horizontally with 8d, 11 1/2 ga., 2 3/8" long, 1/4" diam. head, cement-coated nails spaced 6" to 8" o.c. Joints reinforced with PERF-A-TAPE Joint System.)

5. National Bureau of Standards Reference No. FP 2926, not published. (Construction: Two layers applied horizontally, separated by 20 ga. 1" hexagonal mesh wire fabric. Joints on finish layer reinforced with PERF-A-TAPE Joint System. Nails: First layer—5d, 15 ga., 1 5/8" long, 1/32" diam. head, cement-coated nails spaced 18" o.c. Fabric and finish layer—8d, 12 1/2 ga., 2 3/8" long, 1/4" diam. head, cement-coated nails spaced 5" to 7" o.c.)

6. National Bureau of Standards Test No. 315, May 22, 1952 (Construction: 4 layers cut in widths to span the flanges or re-entrant spaces and to bear on the edges of the flanges and of the other layers of board; cut in length to cover the column height. Each layer applied vertically with joint cement to bond the inner layer to the column and successive layers to each other. Wire tied around the column with double strands of 18 ga. tie wire spaced 15" apart after third layer in place. Face layer held in place with wooden forms until cement hardened. Corners finished with PERF-A-TAPE Joint System.)

7. National Bureau of Standards Test No. 304, May 25, 1951 (Construction: 3 layers cut and applied as in Test No. 315, except board was cemented and clinch-nailed together in pairs before application to form inner layers. Tied around column with double strands of 18 ga. tie wire spaced 15" apart before application of third layer. Corners finished with PERF-A-TAPE Joint System.)

8. National Bureau of Standards Test No. 303, May 23, 1951 (Construction: 2 layers cut and applied as in Test No. 315, except inner layer tied around column with double strands of 18 ga. tie wire, spaced 15" apart. Corners of face layer finished with PERF-A-TAPE Joint System.)

### Fire Hazard Classification

A fire hazard classification rating of 10 to 15 is now applicable to SHEETROCK GYPSUM WALLBOARD.

# SHEETROCK WALLBOARD TECHNICAL DATA

## SHEETROCK BENDING RADII

THICKNESS	LENGTHWISE	WIDTH
1/2"	20'***	..
3/8"	7 1/2'	25'
1/4"	5'	15'

\*\*\*Bending two 1/4" pieces successively permits radii shown for 1/4" SHEETROCK.

### Notes:

1. To apply board, place a stop at one end of the curve and then gently and gradually push on the other end of the board, forcing the center against the framing until the curve is complete.
2. By moistening the face and back paper thoroughly and allowing the water to soak well into the core, the board may be bent to still shorter radii. When the board dries thoroughly, it will regain its original hardness.

## THERMAL RESISTANCE (R) OF INSULATING SHEETROCK FACING AN AIR SPACE OF 3/4" OR MORE

All figures based on 1953 Guide of the ASHVE

DIRECTION OF HEAT FLOW	Thickness of Insulating Sheetrock		
	1/2 inch	3/8 inch	1/4 inch
<b>DOWNWARD</b> Use these coefficients for ceilings and sloping surfaces under summer conditions	6.86	6.78	6.69
<b>UPWARD</b> Use these coefficients for ceilings and sloping surfaces under winter conditions	2.52	2.44	2.35
<b>HORIZONTAL</b> Use these coefficients for walls under both summer and winter conditions	2.52	2.44	2.35

## Vapor Barrier Data

Atmospheric air always contains moisture in the form of an invisible gas, water vapor. Like all gases, this water vapor exerts pressure, the greater quantity of it present in the air at a given temperature, the higher the pressure. Consequently, just as water at a higher level will flow to a lower point unless a barrier is interposed, so water vapor at a higher pressure will flow to an area of lower pressure unless a suitable barrier intervenes.

In the typical example shown, the high moisture content within the room exerts a higher vapor pressure than exists outside, and therefore the water vapor flows towards the outside, progressively meeting colder and colder temperatures. As the temperature decreases, the air can hold less and less water vapor without becoming saturated with it. So, at a point near the back of the sheathing in both walls, temperatures are reached where the air can no longer hold the water vapor moving into it, and the excess water vapor condenses out within the constructions. However, the rate of vapor flow toward the outside in the "Conventional Wall" is about 20 times as great as it is in the "Vapor Barrier Wall" because the vapor permeability of the SHEETROCK in the former is about 20 times that of the SHEETROCK and foil in the "Vapor Barrier Wall." As a result, the condensation in the "Conventional Wall" is about 2 gallons per one thousand square feet of wall per day, whereas only about 2/3 pint condenses out in the same area of "Vapor Barrier Wall."

When the atmospheric conditions indicated are of considerable duration, the amount of condensation in the "Conventional Wall" is sufficient to damage the interior decoration, exterior paint, or any of the other wall components. In the "Vapor Barrier Wall," however, the quantity of condensate is so minor as to be readily dissipated.

### Recommendations

1. An efficient vapor barrier should be installed in all exterior walls and ceilings in locations where below freezing weather occurs for extended periods of time.
2. Vapor barrier should be on the warm side of the wall.
3. Vapor barrier should have a vapor permeability of not more than 1.00 Perm.†
4. Aluminum foil is one of the most efficient vapor barriers known and used commercially. When applied at our factory to the back of SHEETROCK gypsum wallboard, the resultant product is known as Insulating SHEETROCK wallboard. Permeabilities to vapor transmission of this and other materials are:

\*Trademark Reg. U. S. Pat. Off.

## ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

INSIDE ATMOSPHERE	OUTSIDE ATMOSPHERE
70°F	10°F
45%	90%
3.63	0.69
0.332 IN.HG.	0.067 IN.HG.

PLAIN ROCKLATH	CONVENTIONAL WALL	SHEATHING
PLASTER	2 GALLONS	APPROXIMATE LOCATION OF DEW POINT
	APPROX. QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1000 SQUARE FEET OF WALL AREA IN 24 HOURS	
INSULATING ROCKLATH	VAPOR BARRIER WALL	SHEATHING
PLASTER	2/3 PINT	APPROXIMATE LOCATION OF DEW POINT



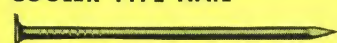
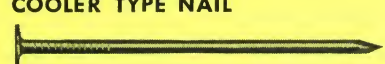

### Materials

	Perms.†
Insulating SHEETROCK Wallboard.....	0.085 to 0.385
Duplex Papers.....	0.515 to 2.56
Insulating Back-up Paper.....	0.860 to 3.40
Fir Sheathing.....	2.94
1/2" Plywood.....	2.66 to 3.35
Paint Film.....	3.43
Plaster with 3 coats enamel paint.....	3.68 to 3.84
Pine lap siding.....	4.90
Slaters Felt.....	5.15 to 49.1
Plaster on wood fiber board or plain gypsum lath.....	19.7 to 20.5
Fiber board sheathing—not surface coated.....	25.7 to 34.2
Fiber board sheathing—surface coated type.....	3.03 to 4.36

† 1 Perm.=1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.

# Specifications for SHEETROCK WALLBOARD SYSTEMS

## NAIL SPECIFICATIONS FOR SHEETROCK\*\*

TYPE OF NAIL*	DESCRIPTION	RECOMMENDED USE	Lbs. per M Ft.
<b>GWB-54</b> 	Annular ring 1/4" Head 1 1/4" Long .098 Gauge Approx. 355 per lb.	3/8" or 1/2" SHEETROCK applied direct to Framework.	6 1/4
<b>4D</b> <b>COOLER TYPE NAIL</b> 	7/32" flat head 14 gauge approximately 488 per lb.	3/8" or 1/4" SHEETROCK applied direct to Framework. Plain Panel SHEETROCK BAXBORD	4 1/2 5
<b>5D</b> <b>COOLER TYPE NAIL</b> 	15/64" flat head 13 1/2 gauge approximately 364 per lb.	1/2" SHEETROCK 1/2" SHEETROCK FIRECODE 45	6
<b>6D</b> <b>COOLER TYPE NAIL</b> 	1/4" flat head 13 gauge approximately 275 per lb.	5/8" SHEETROCK FIRECODE 60 1/4" SHEETROCK over existing surface.	8
<b>4D</b> <b>COLOR NAILS</b> 	3 colors: Knotty Pine, Bleached Mahogany, Walnut. Approximately 488 per lb. Order from U. S. Gypsum Co. or contact Independent Nail and Packing Co., Bridgewater, Mass.	Woodgrained SHEETROCK Knotty Pine Panel SHEETROCK	4 1/2
<b>SPECIAL COLORED NAIL</b>	1 Color: Striated. Order from U. S. Gypsum Co. or contact Independent Nail and Packing Co. Bridgewater, Mass.	Striated Panel SHEETROCK	2

\*When setting types of nail "spotting" materials are used, nails must be cement coated.

\*\*Single layer systems.

Note: Plain Panel SHEETROCK nailed to 1" x 3" wood furring strips—Use 2d 1" long nail. Knotty Pine and Striated Panel SHEETROCK nailed to 1" x 3" wood furring strips—use 4d colored nails and special (striated) colored nails.

### SINGLE LAYER SHEETROCK SYSTEM

#### (Treated Joints)

NOTE: To Architect: For specifications covering PERF-A-TAPE Joint Systems, see page 15.

### HEAT AND VENTILATION

In cold weather the building shall be heated well in advance of and during the application of the gypsum wallboard to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

### SCOPE

Furnish all labor, material, and equipment necessary to surface all interior walls and ceilings with gypsum wallboard in accordance with the specifications and drawings.

All ceiling and wall surfaces shall be: (Note to architect—Include material from following listing as desired.)

- 1/2" Tapered Edge SHEETROCK Gypsum Wallboard.
- 3/8" Tapered Edge SHEETROCK Gypsum Wallboard.
- 1/2" SHEETROCK Firecode 45 Gypsum Wallboard.
- 5/8" SHEETROCK Firecode 60 Gypsum Wallboard.
- Insulating type of SHEETROCK shall be used on all exterior walls and top floor ceilings. (If Insulating SHEETROCK is desired, merely include the previous sentence after specifying the type of board to be used.)

(If DUR-A-BEAD external corner protection is selected

for corner reinforcement specify here as follows:) DUR-A-BEAD, manufactured by the United States Gypsum Company, shall be applied to all external vertical corners.

(If PERF-A-BEAD is selected, specify under Joint Treatment. See Joint Treatment specifications.)

(If PERF-A-TRIM is selected for window and door openings, specify application in this section.) PERF-A-TRIM, manufactured by the United States Gypsum Company, shall be used around all window and door openings or as otherwise shown in the details or drawings.

### MATERIALS

#### General:

All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

### NAILS

(Copy appropriate nail specification from nail specification chart.)

### FRAMING

The contractor shall check the alignment of framing members and make necessary adjustments before pro-

## Specifications: continued

ceeding with application of wallboard. Framing for  $\frac{3}{8}$ " board shall be spaced not over 16" o.c., for  $\frac{1}{2}$ " board, 16" to 24", for Firecode board, 16" where fire rating is required. Framing members shall be straight and in alignment, and headers provided for solid support for cabinet and fixture attachment as indicated and wherever necessary.

### APPLICATION

NOTE: Where walls do not exceed 8 feet 3 inches in height and joints are to be treated, it is usually more economical to apply SHEETROCK wallboard horizontally, as this reduces the total footage of joints.

SHEETROCK shall be cut by scoring and breaking or by sawing, working from the face side. When cutting by scoring, the face paper shall be cut with a knife or sharp instrument. The wallboard shall then be snapped back away from the cut face. The back paper can be broken by cutting the back paper or snapping the gypsum wallboard in the reverse direction. All cut edges and ends of the SHEETROCK wallboard shall be sandpapered, where necessary, in order to obtain neat joining when the wallboard is erected. Cut-outs for pipes, fixtures or other small openings shall be scored in outline before knocking out or shall be cut out with a saw. Openings shall not be made by punching. Where wallboard meets projecting surfaces, it shall be scribed neatly.

All ends and edges of all gypsum wallboard shall occur over nailing members, except that this is not required for joints at right angles to framing members in horizontal applications or when the end joints are to be back-blocked.

Where SHEETROCK wallboard is applied over wood furring strips which have been secured to concrete or masonry,  $\frac{3}{8}$  or  $\frac{1}{2}$  inch gypsum wallboard shall be nailed to the furring strips with 4d, 14 gauge,  $1\frac{3}{8}$  inch long, 7/32 inch flat head, diamond point nails; for  $\frac{5}{8}$  inch SHEETROCK Firecode 60, 5d,  $1\frac{1}{2}$  gauge,  $1\frac{5}{8}$  inch long, 15/64 inch flat head, diamond point nails shall be used.

SHEETROCK shall be applied first to the ceiling and then to the walls. To minimize end joints, use wallboards of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted.

End joints shall be staggered. Joints on opposite sides of a partition shall be arranged to occur on different studs.

Nails shall be spaced not less than  $\frac{3}{8}$  inch from edges and ends of wallboard. Nails on all framing members shall be spaced and driven 5 inches to 7 inches on center on ceilings, and 6 inches to 8 inches on centers on walls. Nails shall not be staggered on adjoining edges or ends. While the nails are being driven, the wallboard shall be held in firm contact with the underlying support. Nailing preferably should proceed from central portion of the wallboard toward ends and edges. The tool used for driving nails shall have a crowned face. The nails shall be

driven home with the heads slightly below the surface of the gypsum wallboard, in a dimple formed by the crowned face of the driving tool striking the last blow. A nail set shall not be used and care shall be taken to avoid breaking the paper face.

(Note to architect: If DUR-A-BEAD is specified, include following:) DUR-A-BEAD shall be applied to all external and vertical angles in strict accordance with the manufacturer's directions.

(Note to architect: If PERF-A-TRIM is specified for trim around window and door openings, include following:) PERF-A-TRIM shall be applied around all door and window openings in strict accordance with the manufacturer's recommendations.

### BACK-BLOCKING SYSTEM

NOTE: To Architect: See Sections below. Select Sections, depending upon requirements of your job. (Floating and tapering end joints require back-blocking. However, end joints may be back-blocked without tapering or floating.)

#### Floating, Tapering and Back-Blocking Joints

##### 1. General Notes:

- A. All ceiling end joints shall be floated, back-blocked and tapered (except at perimeter of room).
- B. All ceiling edge joints shall be back-blocked (except at perimeter of room).
- C. All side wall end joints shall be floated, back-blocked and tapered.

##### 2. MATERIALS

- A. Backing-blocks shall be  $\frac{3}{8}$ " or  $\frac{1}{2}$ " SHEETROCK Gypsum Wallboard (not Insulating) manufactured by United States Gypsum Company.
- B. Adhesive shall be PERF-A-TAPE Cement (embedding type) manufactured by United States Gypsum Company.

##### 3. APPLICATION

- A. All SHEETROCK Gypsum Wallboard shall be applied with the long edges at right angles to the framing. (Wood backing behind joints between framing supports is not required.)
- B. When floated, back-blocked and tapered, end joints are specified in Section 1, gypsum wallboards shall be so positioned that the end joints shall occur midway between supports and these joints shall be back-blocked and tapered in accordance with directions published by the United States Gypsum Company.
- C. Backing-blocks shall be applied where specified (Sections 1 A, B or C) in strict accordance with directions published by the United States Gypsum Company.

# Specifications: continued

## DOUBLE WALL SYSTEM USING SHEETROCK

(NOTE: To Architect: For specifications covering PERF-A-TAPE Joint Systems see page 15.)

### HEAT AND VENTILATION

In cold weather, the building shall be heated well in advance of and during the application of the gypsum wallboard to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

### SCOPE

Furnish all labor, material and equipment necessary to surface all interior walls and ceilings with gypsum wallboard in accordance with the specifications and drawings.

Surface all ceilings and walls with a base layer of  $\frac{3}{8}$ " BAXBORD or  $\frac{3}{8}$ " SHEETROCK (contractor's option) and a face layer of  $\frac{3}{8}$ " SHEETROCK, adhesively bonded to the base layer.

(Note to architect: If exterior angle reinforcing is to be used, copy the applicable section from Single Layer specifications.)

### MATERIALS

#### General:

All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

#### Laminating Adhesive:

PERF-A-TAPE Cement (embedding type).

#### Nails:

4d, 14 ga.,  $1\frac{3}{8}$ " long,  $7/32$ " flat head diamond point.

### FRAMING

The contractor shall check the alignment of framing members and make necessary adjustments before proceeding with application of wallboard. Framing shall be spaced not over 24" o.c., except it shall be 16" o.c. where a 1 hour fire rating is required. Framing members shall be straight and in alignment, and headers shall be provided for solid support for cabinet and fixture attachment as indicated and wherever necessary.

### APPLICATION

#### Base Layer:

When  $\frac{3}{8}$ " BAXBORD is used, BAXBORD shall be applied at right angles to framing members. End joints between courses shall be staggered. End joints may occur between framing members and be unsupported. Joints at right angles to framing members shall be located to offset face layer joints by at least 10". When  $\frac{3}{8}$ " SHEETROCK is used,

SHEETROCK shall be applied with the long edges parallel to and centered on framing members except where the face layer is to be applied with the long edges parallel to framing members (to reduce lineal feet of joints), the base layer shall be applied perpendicular to framing members.

The base layer shall be nailed to framing members with nails spaced 5" to 7" on ceilings and 6" to 8" on side walls, the nail heads driven flush with surface of the board.

#### Face Layer:

The face layer shall be  $\frac{3}{8}$ " tapered edge SHEETROCK Gypsum Wallboard of sufficient length, up to 12', to span wall and ceiling areas. All joints shall be loosely butted. After cutting the face layer panels to size, adhesive shall be spread over the back surfaces of the wallboards with a notched spreader blade. The spreader shall be used in a manner to produce an irregular ribbon pattern of adhesive. The face layer shall then be placed in position on wall or ceiling and temporarily held in place with sufficient nails, (12" o.c., to ceiling framing, 16" to 24" o.c., to sidewall framing) applied in the field and on edges of the board to insure adequate bond between the layers. The adhesive shall be mixed to the consistency recommended by the manufacturer.

When proper bond is developed between the two layers, the temporary nails shall be removed or driven with a nail set so that they are well below the surface of the exposed face of the wallboard. Resulting holes shall be filled flush with joint cement. When this system is used to attain a 1 hour fire rating, the nails in the face layer shall be driven home, dimpled and finished the same as for single layer construction.

(NOTE—To Architect: If DUR-A-BEAD corner reinforcing is to be used, copy applicable section from single layer specification. If PERF-A-TRIM is to be used, copy applicable section from single layer specification.)

## PANEL SHEETROCK SYSTEM

### HEAT AND VENTILATION

In cold weather, the building shall be heated well in advance of and during the adhesive application of the Panel SHEETROCK, to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

### SCOPE

Furnish all labor, material, and equipment necessary to surface all interior walls and ceilings with gypsum panel wallboard in accordance with the specifications and drawings.

Wall surfaces, as indicated by details or room schedules, shall be surfaced with (specify finish) Panel SHEETROCK, manufactured by the United States Gypsum Company.

All corners shall be finished as shown on drawings.

# Specifications: continued

## APPLICATION

Panel SHEETROCK shall be applied in strict accordance with the manufacturer's directions. (Note to architect: Specify system A or B as desired.)

- A. The direct attachment by nails to studs.
- B. The adhesive application over new or old surfaces.

## USG SNAP-ON TRIM

### SCOPE

Furnish all labor, material and equipment necessary to properly install U.S.G. SNAP-ON TRIM manufactured by the United States Gypsum Company, in accordance with drawings.

### APPLICATION

U.S.G. SNAP-ON TRIM shall be applied in strict accordance with the manufacturer's directions.

## PERF-A-TAPE JOINT TREATMENT SYSTEM

### HEAT AND VENTILATION

In cold weather the building shall be heated well in advance of and during the application of the gypsum wallboard, to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

### SCOPE

Furnish all labor and material necessary to reinforce and conceal all joints between gypsum wallboard panels in accordance with specifications and drawings.

(If DUR-A-BEAD metal corner reinforcing is specified) furnish all labor and material necessary to properly conceal the metal flanges of DUR-A-BEAD.

(If PERF-A-BEAD corner reinforcing is to be specified) furnish all labor, PERF-A-BEAD corner reinforcement and cement required to finish all external vertical corners and other corners as may be shown on drawings.

(If PERF-A-TRIM is specified) Furnish all labor and material to properly bond and conceal exposed flanges of PERF-A-TRIM as specified or shown on drawings.

## MATERIALS

### General:

All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

### Reinforcing Tape:

PERF-A-TAPE.

### Cement:

PERF-A-TAPE Joint Cement—for embedding. PERF-A-TAPE Topping Cement—for fill and finishing.

(If PERF-A-BEAD is to be used, specify as follows) PERF-A-BEAD Corner Reinforcing.

## APPLICATION

PERF-A-TAPE Cement and PERF-A-TAPE Topping Cement shall be mixed in accordance with manufacturer's recommendations.

Using a suitable tool or machine, a thin uniform layer of PERF-A-TAPE cement (embedding type), approximately 3" wide, shall be applied over the joint to be reinforced. The tape shall then be centered over the joint and seated into the cement, leaving sufficient cement adhesive under the tape to provide proper bond.

Wall and ceiling angles and inside vertical corner angles shall be similarly reinforced with the reinforcing tape folded to conform to the adjoining surfaces and to form a straight true angle.

All joints shall be allowed to dry thoroughly (minimum of 24 hours) between each application of cement.

The tape shall be covered with topping cement, spread evenly over and slightly beyond the tapered edge area of the board and feathered at the edges. After the previous coat is dry it shall be covered with a second coat of topping cement with a smooth, uniform slight crown over the joint and the edge feathered slightly beyond the preceding coat.

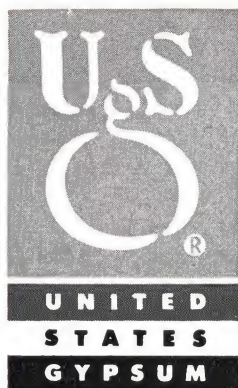
All dimples at nail heads shall receive three coats of cement, applied as each coat of cement is applied to the joints.

(If DUR-A-BEAD corner reinforcing is used.) Flanges of all DUR-A-BEAD metal corner reinforcing shall be concealed by at least two coats of cement. The first coat shall be the embedding type of cement. Second coat may be either embedding type or topping type PERF-A-TAPE Cement. When completed, the cement shall extend approximately 8" to 10" on either side of the exposed metal nosing.

(If PERF-A-BEAD corner reinforcing is used.) PERF-A-BEAD shall be furnished, applied and concealed in accordance with the manufacturer's directions.

(If PERF-A-TRIM is used.) PERF-A-TRIM shall be finished in accordance with the manufacturer's directions.

All cemented areas shall be sanded as necessary after each application of cement has dried. The final coat of cement and subsequent sanding shall leave all gypsum wallboard and treated areas uniformly smooth and ready to receive decoration.



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**TECHNICAL INFORMATION**

# USG\* INSULATION

## **DECORATIVE TYPE**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG\* DECORATIVE INSULATION

## DESCRIPTION

USG Decorative Insulation is rigid wood fiber insulating board made into predecorated interior wall and ceiling units. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

There are two basic types of USG Decorative Insulation:

1. USG Insulating Twin-Tile and Panel-Tile—Square and rectangular patterns generally used for ceiling paneling.
2. USG Insulating Plank—Long, narrow, ceiling height units simulating vertical random wall planking.

For sizes, edges, etc., see data on page 4.

### Colors:

"Hilite," a light ivory solid color.

"BLENDEX"\* insulating board, a blend of four tan tones.

## FUNCTION AND UTILITY

**Decorative**—Many designs and patterns are possible with combinations of random width plank and various sizes of tile—using either Hilite or BLENDEX or both.

**Insulating**—The  $\frac{1}{2}$ " thickness, with a thermal conductance of 0.66, is equal to approximately 19" of stone concrete in resistance to heat transfer.

**Light Reflective**—Hilite color has a light reflection of 70 to 80 per cent. Light reflection of BLENDEX is high, but variable, due to blending of four colors.

**Tongued and Grooved**—The new Kwik-Lok joint featured on Twin-Tile, Panel-Tile, and Plank is designed specially for application utilizing the automatic stapling machine or tacker, unquestionably the easiest, fastest, and most economical method of applying tile or plank. This wide flange tongue and groove edge interlocks securely preventing harmful discoloration caused by joint "breathing" and assures better alignment of units for true and level ceilings.

**Economical**—Sizes 12" x 24" and 16" x 32",  $\frac{1}{2}$ " and  $\frac{3}{4}$ " Twin-Tile are center-scored to exactly simulate 12" x 12" and 16" x 16" patterns. This "two-in-one" feature reduces application costs on square patterns by at least 40%—twice the area is covered with one piece in a single operation. Panel-Tile unit sizes are the same as Twin-Tile but without the center scoring. This produces a rectangular instead of a square pattern. The stapling method of application offers a saving up to 50%.

**Easy Application**—USG Tile and Plank may be stapled or nailed to conventional wood supports or may be applied to solid surfaces with adhesives. Practically any type of interior wall or ceiling may be finished with these materials.

**Three-Quarter-Inch Twin-Tile and Panel-Tile**—with a thermal conductivity of 0.44 provides added insulation, greater strength and rigidity, more sound absorption, less sound transmission.

**Easily Maintained**—Ordinary surface dust may be removed by using wallpaper cleaner. Redecorating may be done with good lead and oil or water-thinned emulsion paints; TEXOLITE\* is recommended.

## LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16".
2. Where adhesive method of application is used, the adhesive must be prepared and used in strict accordance with manufacturer's directions.

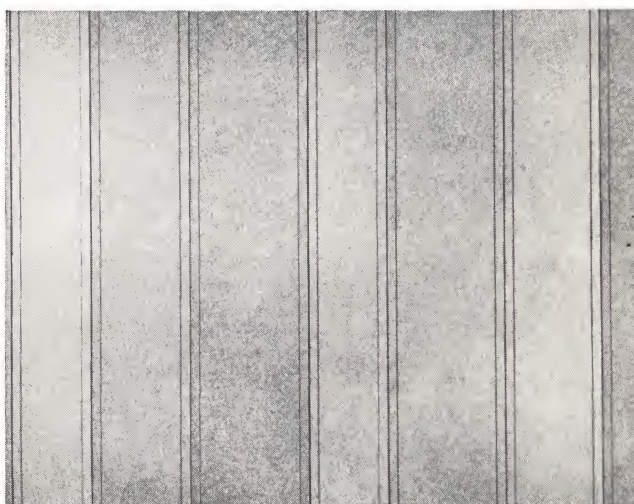
"USG", "BLENDEX", "RED TOP", "SHEETROCK", "ROCKLATH" and "TEXOLITE", mentioned in this publication are registered trademarks owned by United States Gypsum Company and are used by it to distinguish its products.

"USG" identifies the particular fiber insulation board; "BLENDEX" identifies the particular fiber insulation board in variegated shades; "SHEETROCK" identifies the particular gypsum wallboard; "ROCKLATH" identifies the particular gypsum plaster base; "TEXOLITE" identifies the particular casein flat paint manufactured only by United States Gypsum Company; "RED TOP" identifies the particular mineral wool sold only by United States Gypsum Company.

\*Trademarks Reg. U. S. Pat. Off.



Insulating Twin-Tile



BLENDEX Insulating Plank



Insulating Twin-Tile placed diagonally

# USG DECORATIVE INSULATION

## SPECIFICATIONS

**SCOPE:** Unless otherwise shown on plans, all decorative insulation shall be furnished and installed according to these specifications. (*Note to Architect: If different colors and sizes are required for various areas, list and locate all wall and ceiling areas to be covered.*)

### USG INSULATING

#### 1/2" PANEL-TILE AND TWIN-TILE

##### MATERIALS

Insulating tile shall be (*specify size*) 1/2" USG Insulating Panel-Tile or Twin-Tile (Hilite) (BLENDTEX), manufactured by United States Gypsum Company.

Stapling machine shall be the Bostitch T-5-8 or the Markwell L 3 M or equivalent which utilizes 9/16" coated staples.

Nails shall be 1 1/8" Blued Plasterboard nail with 5/16" head, or approved equal.

##### APPLICATION

One-half inch USG Insulating Twin-Tile or Panel-Tile shall be nailed or stapled to joists or furring strips. Three nails or staples should be equally placed in the tongue on the long dimension and one in the tongue of the short dimension for secure fastening. All edges and grooves shall be in straight alignment.

### OPTIONAL INCLUSION

#### APPLICATION OF TILE WITH ADHESIVES

(*Note: For use only over plasterboard or plaster surfaces.*)

##### PREPARATION OF SURFACES

Surfaces shall be prepared for the application of Insulating Tile by removing grease, dirt or any loose or chalky substance that may prevent proper bond.

##### MATERIALS

(*Note to Architect: Under this heading in the specification, delete the paragraph on nails and substitute the following.*) Adhesive (describe) shall be an approved adhesive manufactured expressly for the purpose. The adhesive shall not be water soluble, contain ingredients that react chemically with paint, or contain a solvent that has a stronger solvent action on paint than naphtha. It shall not contain alcohol.

##### APPLICATION

Adhesive shall be used over a dry surface only. It shall be used according to the directions of the adhesive manufacturer. Adhesive shall be applied to the back of the tile, working a small quantity of adhesive in spots about 3" in diameter placed 2" to 2 1/2" from edges and spaced approximately 8" in each direction. Additional adhesive shall then be applied to these primed spots to a thickness of 3/8" to 1/2". No adhesive shall be applied to the wall or ceiling surface.

Tile then shall be placed against the surface about 1/2" from its final position and slid into place. Pressure shall be exerted on the entire surface of the tile as it slides into place sufficient to provide suction to hold it in place until the adhesive sets. If necessary to bring a unit to proper level, remove and apply additional adhesive. Once the units are in place they shall not be pulled away from the base to level the surface.

\*Trademarks Reg. U.S. Pat. Off.

### USG INSULATING

#### 3/4" PANEL-TILE AND TWIN-TILE

##### MATERIALS

Insulating Tile shall be (*specify size*) 3/4" USG Insulating Panel-Tile or Twin-Tile (Hilite) manufactured by the United States Gypsum Company.

Stapling machine shall be the Bostitch T-5-8 or the Markwell L 3 M, or equivalent which utilizes 9/16" coated staples. Nails shall be 1 1/8", 13 ga. Blued Plasterboard nails with 5/16" head, or approved equal.

##### APPLICATION

Three-quarter inch USG Insulating Twin-Tile or Panel-Tile shall be nailed or stapled to furring strips. Three nails or staples should be equally placed in the tongue on the long dimension and two in the tongue of the short dimension for secure fastening. Tile shall be fitted together snugly but not forced. (*Note: See optional inclusion for application by adhesive.*)

### USG INSULATING PLANK

##### MATERIALS

Insulating plank shall be (*specify size*) 1/2" USG Insulating Plank, manufactured by United States Gypsum Company. Nails shall be 1 1/8" Blued Plasterboard nail with 5/16" head.

Stapling machine shall be the Bostitch T-5-8, the Markwell L 3 M, or equivalent which utilizes 9/16" coated staples.

##### APPLICATION

(*Note to Architect: For vertical design of plank, the carpentry specifications shall include the placing of furring strips 10" on centers on the lower five feet of wall and 16" on centers on the upper portion of wall. For horizontal design, plank may be nailed direct to framing, not over 16" on centers.*)

USG Insulating Plank shall be applied at right angles to framing members or furring strips. All end joints shall abut over supports. Units shall be selected at random and fitted together snugly but not forced. Staples or nails shall be applied in the nailing flange at each framing member or furring strip.

## OTHER USG INSULATION PRODUCTS

USG Asphalt Coated Sheathing.

USG Insulating Plaster Base.

USG Building Board—See A.I.A. File 37-A.

RED TOP\* Insulating Wool—See A.I.A. File 37-B.

Acoustical Tile—See A.I.A. File 39-B.

Insulating SHEETROCK\* Gypsum Wallboard—See A.I.A. File 23-L.

Insulating ROCKLATH\* Plaster Base—See A.I.A. File 20-B-2.

# USG DECORATIVE INSULATION

## TECHNICAL DATA

Product	Sizes	Weight per M Sq. Ft.	Decorative Effects	Edges
1/2" USG Insulating Twin-Tile	12"x24", 16"x32" Simulates 12"x12" or 16"x16" Square Pattern	800 Lbs.	Hilite or BLENDTEX	All products supplied with Kwik-Lok fitted Tongue & Grooved Edges.
1/2" USG Insulating Panel-Tile	12"x24", 16"x32" (Rectangular Shape)	800 Lbs.	Hilite or BLENDTEX	
1/2" USG Insulating Plank	8", 10", 12", 16" Width, 8', 10', 12' Length	800 Lbs.	Hilite or BLENDTEX	
3/4" USG Insulating Twin-Tile	12"x24", 16"x32" Simulates 12"x12" or 16"x16" Square Pattern.	1100 Lbs.	Hilite Only	
3/4" USG Insulating Panel-Tile	12"x24", 16"x32" (Rectangular Shape)	1100 Lbs.	Hilite Only	

These products meet strength and water resistance of Federal Specifications LLL-F-321b.

### CONDUCTIVITIES (K) AND CONDUCTANCES (C) FOR USE IN CALCULATING HEAT TRANSMISSION COEFFICIENTS

PRODUCT	DESCRIPTION	Conductivity * or Conductance		Resistance Per Inch Thickness	
		(k)	(C)	1 k	1 C
1/2" USG Insulating Products	Tile, Plank, Building Board, Plaster Base	0.33	0.66	3.03	1.51
25/32" USG Insulating Products	Asphalt-Coated Sheathing	0.33	0.42	3.03	2.37
3/4" USG Insulating Products	Insulating Tile	0.33	0.42	3.03	2.37
<b>AIR SPACES</b> (Bounded by ordinary materials)	Vertical 3/4" or more in width		1.10		0.91
<b>EXTERIOR FINISHES</b> (Frame Walls) Brick Veneer Wood Shingles Yellow Pine Lap Siding	4" thick (nominal)		2.27 1.28 1.28		0.44 0.78 0.78
<b>INTERIOR FINISHES</b> Gypsum Plaster Gypsum Board—1/2" Gypsum Lath & Plaster Insulating Board Plaster Base, 1/2" Thick Metal Lath and Plaster Wood Lath and Plaster	Plain or Decorated Plaster Thickness 1/2"  Plaster Thickness—1/2" Plaster Thickness—3/4"	3.30  0.33	2.82 2.40 0.60 4.40 2.50	0.30  3.03	0.35 0.42 1.67 0.23 0.40
<b>MASONRY MATERIALS</b> Brick 4" Clay Tile (Hollow) 6" Clay Tile (Hollow) 8" Clay Tile (Hollow) Concrete Concrete 4" Concrete Blocks 8" Concrete Blocks 8" Concrete Blocks 12" Concrete Blocks	Face 1 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow Light Weight Aggregate Sand and Gravel Aggregate Hollow—Cinder Aggregate Hollow—Gravel Aggregate Hollow—Cinder Aggregate Hollow—Cinder Aggregate	    2.50 12.00	2.30 1.00 0.64 0.60  1.00 1.00 0.60 0.53	    0.40 0.08	0.43 1.00 1.57 1.67  1.00 1.00 1.66 1.88
<b>ROOFING MATERIALS</b> Asphalt Shingles Built-up Roofing Wood Shingles	Assumed Thickness—3/8"		6.50 3.53 1.28		0.15 0.28 0.78
<b>SHEATHING</b> Gypsum—1/2" Insulating Board—25/32" Fir & Yellow Pine (1")	Actual Thickness—25/32"		2.82 0.42 1.02		0.35 2.37 0.98
<b>SURFACES</b> Still Air 15 MPH Wind Velocity	Ordinary Non-Reflective Materials Ordinary Non-Reflective (Vertical) Mat'l's		1.65 6.00		0.61 0.17
<b>WOODS</b> Yellow Pine or Fir Fir Sheathing—Building Paper and Yellow Pine Lap Siding		0.80	0.50	1.25	2.00

\*Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch of thickness.

**TECHNICAL INFORMATION**

# USG\* INSULATION

## **DECORATIVE TYPE**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG\* DECORATIVE INSULATION

## DESCRIPTION

USG Decorative Insulation is rigid wood fiber insulating board made into predecorated interior wall and ceiling units. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

There are two basic types of USG Decorative Insulation:

1. USG Insulating Twin-Tile and Panel-Tile—Square and rectangular patterns generally used for ceiling paneling.
2. USG Insulating Plank—Long, narrow, ceiling height units simulating vertical random wall planking.

For sizes, edges, etc., see data on page 4.

### Colors:

"Hilite," a light ivory solid color.

"BLENDTEX"\* insulation board, a blend of four tan tones.

## FUNCTION AND UTILITY

**Decorative**—Many designs and patterns are possible with combinations of random width plank and various sizes of tile—using either Hilite or BLENDTEX or both.

**Insulating**—The  $\frac{1}{2}$ " thickness, with a thermal conductance of 0.66, is equal to approximately 19" of stone concrete in resistance to heat transfer.

**Light Reflective**—Hilite color has a light reflection of 70 to 80 per cent. Light reflection of BLENDTEX is high, but variable, due to blending of four colors.

**Tongued and Grooved**—The new Kwik-Lok joint featured on Twin-Tile, Panel-Tile, and Plank is designed specially for application utilizing the automatic stapling machine or tacker, unquestionably the easiest, fastest, and most economical method of applying tile or plank. This wide flange tongue and groove edge interlocks securely preventing harmful discoloration caused by joint "breathing" and assures better alignment of units for true and level ceilings.

**Economical**—Sizes 12" x 24" and 16" x 32",  $\frac{1}{2}$ " and  $\frac{3}{4}$ " Twin-Tile are center-scored to exactly simulate 12" x 12" and 16" x 16" patterns. This "two-in-one" feature reduces application costs on square patterns by at least 40%—twice the area is covered with one piece in a single operation. Panel-Tile unit sizes are the same as Twin-Tile but without the center scoring. This produces a rectangular instead of a square pattern. The stapling method of application offers a saving up to 50%.

**Easy Application**—USG Tile and Plank may be stapled or nailed to conventional wood supports or may be applied to solid surfaces with adhesives. Practically any type of interior wall or ceiling may be finished with these materials.

**Three-Quarter-Inch Twin-Tile and Panel-Tile**—with a thermal conductivity of 0.44 provides added insulation, greater strength and rigidity, more sound absorption, less sound transmission.

**Easily Maintained**—Ordinary surface dust may be removed by using wallpaper cleaner. Redecorating may be done with good lead and oil or water-thinned emulsion paints; TEXOLITE\* is recommended.

## LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16".
2. Where adhesive method of application is used, the adhesive must be prepared and used in strict accordance with manufacturer's directions.

"USG", "BLENDTEX", "RED TOP", "SHEETROCK", "ROCKLATH" and "TEXOLITE", mentioned in this publication are registered trademarks owned by United States Gypsum Company and are used by it to distinguish its products.

"USG" identifies the particular fiber insulation board; "BLENDTEX" identifies the particular fiber insulation board in variegated shades; "SHEETROCK" identifies the particular gypsum wallboard; "ROCKLATH" identifies the particular gypsum plaster base; "TEXOLITE" identifies the particular casein flat paint manufactured only by United States Gypsum Company; "RED TOP" identifies the particular mineral wool sold only by United States Gypsum Company.

\*Trademarks Reg. U.S. Pat. Off.



Insulating Twin-Tile



BLENDTEX Insulating Plank



Insulating Twin-Tile placed diagonally

# USG DECORATIVE INSULATION

## SPECIFICATIONS

**SCOPE:** Unless otherwise shown on plans, all decorative insulation shall be furnished and installed according to these specifications. (*Note to Architect: If different colors and sizes are required for various areas, list and locate all wall and ceiling areas to be covered.*)

### USG INSULATING

#### 1/2" PANEL-TILE AND TWIN-TILE

##### MATERIALS

Insulating tile shall be (*specify size*) 1/2" USG Insulating Panel-Tile or Twin-Tile (Hilite) (BLENDTEX), manufactured by United States Gypsum Company.

Stapling machine shall be the Bostitch T-5-8 or the Markwell L 3 M or equivalent which utilizes 9/16" coated staples.

Nails shall be 1 1/8" Blued Plasterboard nail with 5/16" head, or approved equal.

##### APPLICATION

One-half inch USG Insulating Twin-Tile or Panel-Tile shall be nailed or stapled to joists or furring strips. Three nails or staples should be equally placed in the tongue on the long dimension and one in the tongue of the short dimension for secure fastening. All edges and grooves shall be in straight alignment.

### OPTIONAL INCLUSION

#### APPLICATION OF TILE WITH ADHESIVES

(*Note: For use only over plasterboard or plaster surfaces.*)

##### PREPARATION OF SURFACES

Surfaces shall be prepared for the application of Insulating Tile by removing grease, dirt or any loose or chalky substance that may prevent proper bond.

##### MATERIALS

(*Note to Architect: Under this heading in the specification, delete the paragraph on nails and substitute the following.*) Adhesive (describe) shall be an approved adhesive manufactured expressly for the purpose. The adhesive shall not be water soluble, contain ingredients that react chemically with paint, or contain a solvent that has a stronger solvent action on paint than naphtha. It shall not contain alcohol.

##### APPLICATION

Adhesive shall be used over a dry surface only. It shall be used according to the directions of the adhesive manufacturer. Adhesive shall be applied to the back of the tile, working a small quantity of adhesive in spots about 3" in diameter placed 2" to 2 1/2" from edges and spaced approximately 8" in each direction. Additional adhesive shall then be applied to these primed spots to a thickness of 3/8" to 1/2". No adhesive shall be applied to the wall or ceiling surface.

Tile then shall be placed against the surface about 1/2" from its final position and slid into place. Pressure shall be exerted on the entire surface of the tile as it slides into place sufficient to provide suction to hold it in place until the adhesive sets. If necessary to bring a unit to proper level, remove and apply additional adhesive. Once the units are in place they shall not be pulled away from the base to level the surface.

\*Trademarks Reg. U.S. Pat. Off.

### USG INSULATING

#### 3/4" PANEL-TILE AND TWIN-TILE

##### MATERIALS

Insulating Tile shall be (*specify size*) 3/4" USG Insulating Panel-Tile or Twin-Tile (Hilite) manufactured by the United States Gypsum Company.

Stapling machine shall be the Bostitch T-5-8 or the Markwell L 3 M, or equivalent which utilizes 9/16" coated staples. Nails shall be 1 1/8", 13 ga. Blued Plasterboard nails with 5/16" head, or approved equal.

##### APPLICATION

Three-quarter inch USG Insulating Twin-Tile or Panel-Tile shall be nailed or stapled to furring strips. Three nails or staples should be equally placed in the tongue on the long dimension and two in the tongue of the short dimension for secure fastening. Tile shall be fitted together snugly but not forced. (*Note: See optional inclusion for application by adhesive.*)

### USG INSULATING PLANK

##### MATERIALS

Insulating plank shall be (*specify size*) 1/2" USG Insulating Plank, manufactured by United States Gypsum Company. Nails shall be 1 1/8" Blued Plasterboard nail with 5/16" head.

Stapling machine shall be the Bostitch T-5-8, the Markwell L 3 M, or equivalent which utilizes 9/16" coated staples.

##### APPLICATION

(*Note to Architect: For vertical design of plank, the carpentry specifications shall include the placing of furring strips 10" on centers on the lower five feet of wall and 16" on centers on the upper portion of wall. For horizontal design, plank may be nailed direct to framing, not over 16" on centers.*)

USG Insulating Plank shall be applied at right angles to framing members or furring strips. All end joints shall abut over supports. Units shall be selected at random and fitted together snugly but not forced. Staples or nails shall be applied in the nailing flange at each framing member or furring strip.

## OTHER USG INSULATION PRODUCTS

USG Asphalt Coated Sheathing.

USG Insulating Plaster Base.

USG Building Board—See A.I.A. File 37-A.

RED TOP\* Insulating Wool—See A.I.A. File 37-B.

Acoustical Tile—See A.I.A. File 39-B.

Insulating SHEETROCK\* Gypsum Wallboard—See A.I.A. File 23-L.

Insulating ROCKLATH\* Plaster Base—See A.I.A. File 20-B-2.

# USG DECORATIVE INSULATION

## TECHNICAL DATA

Product	Sizes	Weight per M Sq. Ft.	Decorative Effects	Edges
1/2" USG Insulating Twin-Tile	12"x24", 16"x32" Simulates 12"x12" or 16"x16" Square Pattern	800 Lbs.	Hilite or BLENDTEX	All products supplied with Kwik-Lok fitted Tongue & Grooved Edges.
1/2" USG Insulating Panel-Tile	12"x24", 16"x32" (Rectangular Shape)	800 Lbs.	Hilite or BLENDTEX	
1/2" USG Insulating Plank	8", 10", 12", 16" Width, 8', 10', 12' Length	800 Lbs.	Hilite or BLENDTEX	
3/4" USG Insulating Twin-Tile	12"x24", 16"x32" Simulates 12"x12" or 16"x16" Square Pattern.	1100 Lbs.	Hilite Only	
3/4" USG Insulating Panel-Tile	12"x24", 16"x32" (Rectangular Shape)	1100 Lbs.	Hilite Only	

These products meet strength and water resistance of Federal Specifications LLL-F-321b.

### CONDUCTIVITIES (k) AND CONDUCTANCES (C) FOR USE IN CALCULATING HEAT TRANSMISSION COEFFICIENTS

PRODUCT	DESCRIPTION	Conductivity* or Conductance		Resistance Per Inch Thickness	
		(k)	(C)	1 k	1 C
1/2" USG Insulating Products	Tile, Plank, Building Board, Plaster Base	0.33	0.66	3.03	1.51
25/32" USG Insulating Products	Asphalt-Coated Sheathing	0.33	0.42	3.03	2.37
3/4" USG Insulating Products	Insulating Tile	0.33	0.42	3.03	2.37
<b>AIR SPACES</b> (Bounded by ordinary materials)	Vertical 3/4" or more in width		1.10		0.91
<b>EXTERIOR FINISHES</b> (Frame Walls) Brick Veneer Wood Shingles Yellow Pine Lap Siding	4" thick (nominal)		2.27 1.28 1.28		0.44 0.78 0.78
<b>INTERIOR FINISHES</b> Gypsum Plaster Gypsum Board—1/2" Gypsum Lath & Plaster Insulating Board Plaster Base, 1/2" Thick Metal Lath and Plaster Wood Lath and Plaster	Plain or Decorated Plaster Thickness 1/2"  Plaster Thickness—1/2" Plaster Thickness—3/4"	3.30  0.33	2.82 2.40  0.60 4.40 2.50	0.30  3.03	0.35 0.42  1.67 0.23 0.40
<b>MASONRY MATERIALS</b> Brick 4" Clay Tile (Hollow) 6" Clay Tile (Hollow) 8" Clay Tile (Hollow) Concrete Concrete 4" Concrete Blocks 8" Concrete Blocks 8" Concrete Blocks 12" Concrete Blocks	Face 1 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow Light Weight Aggregate Sand and Gravel Aggregate Hollow—Cinder Aggregate Hollow—Gravel Aggregate Hollow—Cinder Aggregate Hollow—Cinder Aggregate	    2.50 12.00	2.30 1.00 0.64 0.60   1.00 1.00 0.60 0.53	    0.40 0.08	0.43 1.00 1.57 1.67   1.00 1.00 1.66 1.88
<b>ROOFING MATERIALS</b> Asphalt Shingles Built-up Roofing Wood Shingles	Assumed Thickness—3/8"		6.50 3.53 1.28		0.15 0.28 0.78
<b>SHEATHING</b> Gypsum—1/2" Insulating Board—25/32" Fir & Yellow Pine (1")	Actual Thickness—25/32"		2.82 0.42 1.02		0.35 2.37 0.98
<b>SURFACES</b> Still Air 15 MPH Wind Velocity	Ordinary Non-Reflective Materials Ordinary Non-Reflective (Vertical) Mat'ls		1.65 6.00		0.61 0.17
<b>WOODS</b> Yellow Pine or Fir Fir Sheathing—Building Paper and Yellow Pine Lap Siding		0.80	0.50	1.25	2.00

\*Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch of thickness.

**TECHNICAL INFORMATION**

TEXOLITE\*

**PAINT PRODUCTS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# TEXOLITE PAINT PRODUCTS

## INTERIOR FINISHES FOR WALLS AND CEILINGS

PRODUCT	DISTINGUISHING CHARACTERISTICS	FORM	PRIMING	USES AND LIMITATIONS
DURAVAL*—latex base emulsion wall paint. Available in white, tints and custom colors. Provides durable scrubbable velvet finish.	Ready to use. Will dry to the touch in one hour. No objectionable painty odor. Rubberized Copolymer binder provides excellent adhesion and durability. Recoatable.	Ready to use	New wood and unpainted metal, including exposed nailheads, should be specially primed. All other surfaces will require only one or two coats of DURAVAL.	Over old and new interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses. Over painted and unpainted plaster, wallboard and concrete. Wide variety of colors available by intermixing standard colors and custom colors and by tinting with DURAVAL Tube Colorants. Not recommended for use on floors or under highly humid conditions.
DURAVAL Trim Gloss—A latex gloss additive to be used with DURAVAL to provide a semi gloss finish.	A gloss additive. To be mixed with DURAVAL up to one part DURAVAL Trim Gloss to one part of DURAVAL to provide a semi gloss finish for use on trim.	Liquid	New wood and unpainted metal, including exposed nailheads, should be specially primed. All other surfaces will require two coats of the DURAVAL and DURAVAL Trim Gloss mix.	Over painted or primed woodwork and metal trim. May be used on interior walls and trim in homes, apartments, offices, stores, schools, hospitals, factories and warehouses.
Painters Alkyd Latex—white and tints—provides washable film combining the easy, quick application of latex paints with the flatness of alkyd oil paints.	Ready to use. Quick drying and reasonable in cost—flat finish—no painty odor—recoatable.	Ready to use	Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of Painter's Alkyd Latex.	Over old and new, painted and unpainted, interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses, and on residential development projects. Wide variety of colors by intermixing standard tints or tinting with DURAVAL Tube Colorants.
TEXOLITE Imperial—White and tints. A washable, water-thinned oil resin flat paint for interior walls and ceilings. Affords beautiful flat surface with good washability at minimum cost.	Thinned with water. Dries in one hour. No prime or size coat required for most paint jobs. Use large brush for fast application. No objectionable painty odor. No fire hazard during application. Recoatable. Cuts painting time and costs.	Paste	See general specifications	Over old and new interior walls and ceilings in homes, hotels, apartments, offices, stores, shops, schools, hospitals, factories and warehouses. Not recommended for use over wood trim subject to wear, or under damp conditions, or where it will be subjected to excessive abrasion.
TEXOLITE Standard—White and tints. Cleanable water-thinned casein flat paint for interior wall and ceiling decoration. Provides brighter, more colorful interior decoration that is long-lived and inexpensive.	Dries in one hour. High light reflection and excellent hiding power due to high quality pigment. Easy to apply. No objectionable painty odor. No fire hazard. No thinner coat. Recoatable. Cuts maintenance costs.	Paste	See general specifications	Over old and new interior walls and ceilings in homes, hotels, apartments, offices, stores, shops, schools, hospitals, factories and warehouses. Not recommended for use over wood trim, or where there is damp condition or where it will be subject to excessive abrasion.

## INTERIOR TEXTURE FINISHES

TEXOLITE Texture—A latex emulsion paint producing a slight sand finish effect combined with a light texture. Very attractive finish results. White and tints.	Ready to use. Dries quickly. Usually one coat treatment when applied with brush followed by roller, roller or spray. Washable. No objectionable paint odor.	Ready to use	Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat TEXOLITE Texture.	Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches, and on residential development projects. Not recommended under damp conditions. Wide variety of colors by tinting with DURAVAL Tube Colorants.
TEXOLITE Ripple—A smooth, stipple finish latex paint. Available in white and tints. Provides attractive, washable finish.	Produces fine textures ranging from an "orange peel" to a moderate ripple-like effect. No painty odor. Use large brush and roller for fast application.	Ready to use	Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat.	Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches and on residential development projects. Wide variety of additional colors by tinting with DURAVAL Tube Colorants.
TEXTONE*—A plastic paint meeting the demand for a dependable, economical, easily applied texture medium capable of satisfying every requirement of modern decoration.	TEXTONE properly applied forms a texture surface of superior hardness. Furnished in white only. Can be integrally tinted with TEXOLITE Imperial or Standard.	Powder	See general specifications	For producing light, modern textures as well as the heavier period designs over any dry, solid, clean interior surface. For decorating work over new plaster, gypsum wallboards, and insulating wallboards. Especially useful in refinishing cracked plaster surfaces; for producing stone effects, antique effects and stencil work.
USG* Colored Texture Paint—A popular paint that is easy to use. It provides a wide range of texturing possibilities and is lower in price than TEXTONE paint. Available in white and 7 standard tints.	A good working plastic paint for uses similar to those secured with TEXTONE. Somewhat less coverage per pound. Provides excellent textures in both modern and period styles.	Powder	See general specifications	For interesting textures over dry, clean, solid surfaces such as new plaster, gypsum wallboards, insulating wallboards, etc. Also on old cracked plaster surfaces.

The following trademarks are owned and/or registered in the United States Pat. Off. by United States Gypsum Company and are used by it to distinguish its paint and painters' supply products. TEXOLITE, DURAVAL, TEXTONE, CEMENTICO, DURA-DRI, DURA-STOP, RED TOP, PERF-A-TAPE, USG and SHEETROCK.

\*T.M. Reg. U.S. Pat. Off.

# TEXOLITE PAINT PRODUCTS

## EXTERIOR PAINTS

PRODUCT	DISTINGUISHING CHARACTERISTICS	FORM	PRIMING	USES AND LIMITATIONS
DURA-DRI—white and tints. Heavy bodied protective coating for control of water penetration through porous masonry surfaces. Decorates and protects.	Easy, effective system for controlling water penetration through such porous masonry surfaces as brick, stucco, cement block, poured concrete and similar materials. Apply by brush or trowel.	Powder	See general specifications	Over porous masonry surfaces above and below grade on interiors and above grade on exterior surfaces in homes, office and store buildings, schools, factories and warehouses. Not for use on floors. Additional attractive colors possible by overcoating with CEMENTICO.
DURA-STOP—Is a dry powder hydraulic compound, requires only water for mixing. Stops water under pressure from coming through cracks, breaks or holes in porous masonry.	Sets in 3 to 5 minutes and stops water under pressure from coming through cracks, breaks and holes in porous masonry. It must be held in place. Becomes harder and more water resistant in the presence of water.	Powder	Masonry surface should be dampened thoroughly prior to application.	DURA-STOP is specifically designed for filling cracks and holes in masonry prior to the application of DURA-DRI. DURA-STOP will stop the flow of water even when the water is under pressure. DURA-STOP is a hydraulic cement that sets in 3 to 5 minutes. DURA-STOP may also be used to anchor washing machines, motors and other fixtures to concrete floors and walls. Do not use on non-porous masonry or non-masonry surfaces.
CEMENTICO*—White and tints. Hydraulic cement base paint for bringing new beauty, life and color to porous masonry surfaces.	Made of white portland cement and other special ingredients to produce hardness, binding qualities and workability. Only lime-proof colors are used. Durable. Water resistant. Bonds to porous masonry surfaces.	Powder	Masonry surface should be dampened thoroughly prior to application.	Use only over unpainted porous masonry surfaces such as brick, clay tile, portland cement stucco, concrete, unpolished building stone and similar surfaces. Not recommended on magnesite stucco, wood, painted or greasy surfaces, smooth plaster, terra cotta, glazed brick and tile, vibrated or very dense concrete areas, floors, asbestos-cement shingles and similar non-porous or non-masonry materials.
TEXOLITE Exterior—White and tints. An exterior paste paint thinned with water. Gives a beautiful, durable, exterior finish to masonry surfaces. May be brushed or sprayed.	Dries quickly. Affords true color beauty with a durable finish. Does not require spraying with water to bring about set after application.	Paste	See general specifications	For use on painted or unpainted masonry surfaces, also on unglazed brick and tile and on unglazed weathered asbestos cement siding. Do not use on magnesite stucco surfaces, glazed brick, or tile, polished stone, nor as a floor paint.

## SURFACE PREPARATION PRODUCTS

SHEETROCK* Sealer—A resin emulsion sealer designed specifically for application over gypsum wallboard.	Ready to use. Ease of application. May be tinted with DURAVAL.	Ready to use	See general specifications	For use over gypsum wallboard to seal PERF-A-TAPE joints, lay the nap of the paper, and prepare the surface to receive oil stipples, enamels, flat oil paints, water thinned paints and latex base paints, and as a size under wallpaper.
USG Plaster Sealer—A pigmented primer sealer. Oil-Resin emulsion base. Particularly excellent for use over newly plastered surfaces.	Ready to use. Easy to apply. May be tinted with DURAVAL.	Ready to use	See general specifications	For use over both new and old interior wall surfaces. Unusually fine as a primer-sealer over new plaster under latex base and conventional wall paints.
TEXOLITE Primer—A priming material which "locks in" lime or alkali and makes possible more durable paint jobs. Equalizes "suction." Provides "tooth" to which paint clings tightly.	Assures longer life for decorative materials. Produces a hard, lime locking prime coat over which may be applied rubber-emulsion paints, water-thinned paints, oil paints, enamels.	Powder	See general specifications	For priming new plaster, old painted walls, interior concrete surfaces, unpainted dry concrete floors, gypsum and insulation wallboard.
TEXOLITE Paste Spackling Putty—Used to prepare surfaces before painting or decorating to build up or fill imperfections to provide a smooth even surface.	This is a ready to use paste spackling material of exceptionally fine grind, adaptable to knife or brush application. Can be sanded. Adheres to any properly cleaned solid surface. Hardens in a few hours forming a tough, durable surface.	Paste	See general specifications	Used to fill small cracks, scars, slight imperfections in plaster, nicks, cracks, knotholes or nail holes in wood trim, nail holes in wallboards. To fill voids or imperfections in concrete, cracks in tile or mosaic, household repairs on furniture, toys, etc. For interior use only.
TEXOLITE Spackling Putty—Used for preparatory treatment of surfaces before painting or decorating to build up or fill imperfections, and to produce a smooth even surface.	Exceptionally fine grind. Grit-free. Adaptable to knife or brush application. Can be sanded. Adheres to any properly cleaned, solid surface. Hardens in a few hours, forming a tough, durable surface.	Powder	See general specifications	Filling small cracks, scars, slight imperfections in plaster, nicks, cracks, knotholes or nail holes in wood trim. Spotting nail holes or cracks in concrete, cracks in tile or mosaic, for treating canvas and wall fabrics. For household repairs on moulding, furniture, toys etc. For making Swedish Putty.
RED TOP* Patching Plaster—A plaster scientifically compounded for patching cracks in walls and ceilings easily and efficiently at minor expense.	Very white. Contains no lime. Sets in 1 to 1½ hours. Uniform set and quality.	Powder	See general specifications	For patching cracks and larger breaks in plaster walls. Can be decorated with any decorating material.
RED TOP Painters' Plaster—Plaster of Paris for general painters' use. Made from specially selected white gypsum.	Mixes readily, works easily. Provides hard, dense and strong surfaces. Setting time approximately 30 minutes.	Powder	See general specifications	Recommended for patching cracks and breaks in plaster and wherever a fast setting patching material is required.
PERF-A-TAPE* Joint System—Designed to conceal and reinforce gypsum wallboard joints and to reinforce large plaster cracks.	Provides complete concealment and adequate reinforcement.	Combination package of powder and tape or Powder only.	See general specifications	Used in both new and old construction. Developed for treating joints in wallboard. Used to reinforce cracks in all kinds of wall surfacings especially in corners or at angles before redecorating.

**For ready reference—TEXOLITE Paint Products  
color selectors are enclosed.**

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# TEXOLITE PAINT PRODUCTS

## GENERAL SPECIFICATIONS

### I. GENERAL CONDITIONS

The painting contractor shall read and be governed by the general conditions at the head of the complete specifications for this project.

### II. MATERIALS

1. Deliver in original containers.
2. Store in protected place to protect from damage by elements and tampering.
3. Use all materials in strict accordance with manufacturer's directions.

### III. MASTER SPECIFICATIONS

#### A. INTERIOR WORK

All surfaces must be dry, sound, clean, free of dust, grease, or oil.

##### 1. PLASTER

Fill all nicks, cracks, gouges, and other surface imperfections with TEXOLITE paste or powder spackling putty. Use RED TOP Patching Plaster to repair large holes and cracks in plaster. Repaired surfaces shall be sanded smooth and dust removed.

##### NEW PLASTER

Do not paint until dry.

##### FLAT FINISH

###### (a) Pastels

2 coats of Housing Specification Alkyd Flat Latex Paint or 1 coat TEXOLITE Primer or USG Plaster Sealer tinted to approximate shade of finish coat.

1 or 2 coats of TEXOLITE Standard, TEXOLITE Imperial or flat oil paint.

###### (b) Deep Tones

1 or 2 coats USG Plaster Sealer tinted to the approximate shade of the finish coat.

1 or 2 coats of TEXOLITE Standard, TEXOLITE Imperial or flat oil paint. 1 or 2 coats of Housing Specification Alkyd Flat Latex Paint.

##### VELVET FINISH—Rubber Emulsion Base Paints

1 coat of TEXOLITE Primer or USG Plaster Sealer tinted to the approximate shade of finish coat.

1 or 2 coats of DURAVAL.

##### (Note—

*Use of TEXOLITE primer assures that no free lime is available to saponify the oil in paint film.)*

##### OLD PLASTER PREVIOUSLY PAINTED

Remove all loose or scaling paint and repair as outlined under plaster.

##### FLAT FINISH

###### (a) Pastels

1 or 2 coats of Housing Specification Alkyd Flat Latex Paint.

1 or 2 coats TEXOLITE Standard or TEXOLITE Imperial.

###### (b) Deep Tones

1 or 2 coats of Housing Specification Alkyd Flat Latex Paint or

1 or 2 coats USG Plaster Sealer tinted to the approximate shade of finish coat.

1 or 2 coats of TEXOLITE Standard, TEXOLITE Imperial or flat oil paint.

##### VELVET FINISH—Rubber Emulsion Base Paints

1 or 2 coats DURAVAL.

### 2. GYPSUM WALLBOARD

Prepare joints and nailheads with PERF-A-TAPE Joint System in accordance with manufacturer's directions.

##### FLAT FINISH

1 or 2 coats of Housing Specification Alkyd Flat Latex or

1 coat TEXOLITE Primer or SHEETROCK Sealer tinted to approximate shade of finish coat.

1 coat TEXOLITE Standard, TEXOLITE Imperial or flat oil paint.

##### VELVET FINISH—Rubber Emulsion Base Paint

1 coat TEXOLITE Primer or SHEETROCK Sealer tinted to approximate shade of finish coat.

1 or 2 coats of DURAVAL.

##### SEMI-GLOSS FINISH

1 coat SHEETROCK Sealer tinted to approximate shade of finish coat.

1 or 2 coats of DURAVAL and DURAVAL Trim Gloss mix or

1 or 2 coats of oil type Semi-Gloss Paint as required.

##### HIGH GLOSS FINISH

1 coat SHEETROCK Sealer.

1 coat enamel undercoater (tinted to approximate shade of finish coat).

1 coat of Gloss Enamel.

##### TEXTURED FINISH

1 coat TEXTONE of consistency to provide desired texture.

(Tint TEXTONE to approximate shade of finish coat.)

1 or 2 coats DURAVAL or Housing Specification Alkyd Flat Latex or

1 or 2 coats TEXOLITE Standard or TEXOLITE Imperial or

1 or 2 coats USG colored Texture paint of consistency to provide desired texture.

##### SAND FINISH TEXTURE

1 or 2 coats of TEXOLITE Texture.

##### STIPPLE FINISH

1 or 2 coats of TEXOLITE Ripple, or

1 coat SHEETROCK Sealer tinted to approximate shade of finish coat.  
1 coat of oil stipple paint.

### WALLPAPER OR WALL FABRIC COVERINGS

1 coat SHEETROCK Sealer.

Apply wallpaper or wall covering in accordance with the manufacturer's directions. A size over SHEETROCK Sealer is recommended.

### 3. WOOD SURFACE (except floors)

New wood (not previously painted); sand smooth, touch up knots, sap streaks, pitch spots with shellac.

1 coat Pigmented Oil Primer Sealer.

1 or 2 coats DURAVAL.

For Semi-Gloss Finish.

1 or 2 coats DURAVAL and DURAVAL Trim Gloss mix.

### 4. METAL

Remove grease, oil and plaster splatterings.

1 coat of rust inhibitive primer.

1 or 2 coats of TEXOLITE DURAVAL.

For Semi-Gloss use DURAVAL and DURAVAL Trim Gloss mix.

### 5. ACOUSTICAL TILES (Perforated and heavily fissured)

1 or 2 coats TEXOLITE Standard, TEXOLITE Imperial, DURAVAL or Housing Specification Alkyd Flat Latex.

### 6. ACOUSTICAL PLASTER AND LIGHTLY FISSURED TILE

1 coat of TEXOLITE Standard or TEXOLITE Imperial reduce in the proportion of 1 gallon Paste Paint to 1 gallon of water.

1 coat of TEXOLITE Standard or TEXOLITE Imperial reduced in the proportion of 1 gallon Paste Paint to 2 gallons of water.

### 7. INSULATION BOARD (Hardboard and other composition wallboards)

1 or 2 coats TEXOLITE Standard, TEXOLITE Imperial, DURAVAL, Housing Specification Alkyd Flat Latex.

(NOTE—When using deep tones of TEXOLITE Standard or TEXOLITE Imperial, seal surface with Pigmented Oil Primer Sealer tinted to approximate shade of finish coat.)

### 8. INTERIOR MASONRY

Surfaces such as concrete block, brick, stucco, monolithic concrete and unglazed tile. All surfaces must be dry.

##### WASHABLE VELVET FINISH

1 coat TEXOLITE Primer tinted to approximate shade of finish coat.

1 or 2 coats DURAVAL.

##### FLAT FINISH—Water Thinned Paints

1 coat TEXOLITE Primer tinted to approximate shade of finish coat.

1 or 2 coats TEXOLITE Standard or TEXOLITE Imperial, or Housing Specification Alkyd Flat Latex.

(NOTE—On unpainted masonry surfaces use of TEXOLITE Primer assures that no free lime is available to saponify the oil in paint film.)

### CONTROL WATER PENETRATION

Use DURA-STOP to stop the flow of water through cracks or holes then apply DURA-DRI to the dampened porous masonry surface. Keep surface moist for about 12 hours for complete curing of the DURA-DRI.

### PORTLAND CEMENT BASE PAINT FINISH

#### 2 coats CEMENTICO

2 coats CEMENTICO.

### 9. EXTERIOR WORK—Masonry Surfaces

All surfaces must be porous, free from oil, grease and efflorescence, patch cracks or openings with DURA-DRI, DURA-STOP or 1 part TEXOLITE CEMENTICO mixed with 2 parts clean sharp sand. Texture to duplicate original surface. Remove any rust stains.

### PORTLAND CEMENT BASE PAINT FINISH

For application to unpainted, porous masonry surfaces such as brick, concrete masonry units, unglazed tile, stucco, etc., or similar surfaces which have been painted only with Portland Cement base paints. Surface must be wet down immediately prior to painting until it no longer absorbs water. Stir paint frequently to prevent settling. Do not apply in direct sunlight. Temperature must be above 50° F. during application and for 48 hours afterwards. Do not paint during rainy spell. Allow 24 hours drying time between coats.

2 coats CEMENTICO.

(NOTE—When application is over cement or lightweight aggregate block use following mix for first coat—2 lbs. clean sharp sand mixed with 5 lbs. CEMENTICO.)

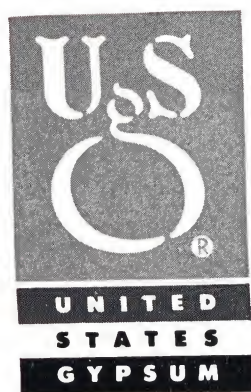
Use 1 coat DURA-DRI for control against water penetration.

Use 1 coat CEMENTICO for decoration.

### OIL RESIN EMULSION PAINT FINISH

Apply to all unpainted or previously painted masonry surfaces except magnesite stucco, glazed brick or tile, terra cotta, or polished stone. Do not apply when temperature or surface is below 40° F. Do not paint if rain is forecast within 24 hours after application. This is a non-penetrating paint and must not be applied over any surface that is flaky, crumbling, dirty or chalking.

2 coats TEXOLITE Exterior.



**TECHNICAL INFORMATION**

USG<sup>®</sup> STRUCTURAL  
INSULATION BOARD and  
USG DURON HARDBOARD  
T. M. Reg. U. S. Pat. Off.



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG STRUCTURAL INSULATION

## DESCRIPTION

USG Structural Insulation is a rigid wood fiber insulating board made into sheathing, plaster base, building boards and roof insulation. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

## FUNCTION AND UTILITY

**Structural Strength.** Tensile strength and bracing strength are greatly in excess of the strength required for the designed purpose.

**Insulating Value.** The "k" value of USG Insulation is between 0.36 and 0.38 and its resistivity compares with approximately 38" of stone concrete.

**Light Weight.** The 25/32" thickness weighs approximately 1200 pounds per M square feet. The 1/2" thickness weighs approximately 725 pounds per M square feet.

**Tensile Strength.** USG Structural Insulating products exceed all requirements set up by Federal Specification LLL-F-321b.

## USG INSULATING SHEATHING

An insulating exterior wall sheathing integrally treated to make it moisture resistant. The 25/32" x 2' x 8' size has a tongue and grooved joint on the long edges. The 1/2" x 2' x 8' size has a V-joint on the long edges. Other sizes, 4' wide by 8', 9', 10' or 12' long, have square edges and are either 25/32" thick or 1/2" thick.

**Strength.** A wall sheathed with 25/32" USG insulating sheathing possesses greater bracing and stiffening strength than a wall sheathed horizontally with conventional narrow sheathing units. Tests conducted at the Forest Products Laboratory, Madison, Wisconsin, indicate that a wall sheathed with 25/32" structural insulating board sheathing, has a rigidity factor of 3.0 compared to a factor of 1.0 for horizontal wood sheathing. USG 25/32" sheathing meets the structural requirements established in F.H.A. Technical Circular No. 12, covering the use of 4 foot wide insulating sheathing without diagonal bracing.

**Wind-Tight.** USG Insulating Sheathing, 25/32" x 2' x 8', is



provided with a fitted tongue and groove joint on longitudinal edges and ends are joined over supports, thus making wind-tight joints. The use of building paper is unnecessary and not recommended.

### COSTS

The material cost is low, and waste from these large units is negligible. Approximately 1200 square feet is erected per man per day.

## SPECIFICATIONS

### USG INSULATING SHEATHING

#### SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

#### MATERIALS

**Sheathing** shall be USG Insulating Sheathing, manufactured by United States Gypsum Company.

**Nails** shall be galvanized, 1/6" head diameter, 1 3/4" long roofing nails for 25/32" sheathing, and 1 1/2" long for 1/2" sheathing.

#### APPLICATION

Apply USG 25/32" or 1/2" Insulating Sheathing with the long dimension across the supports and with the protruding edge up. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered.

Apply 25/32" or 1/2" by 4 ft. wide sheathing with long dimension parallel with the supports. Sides and ends shall abut the vertical framing members, top and bottom plates or headers. Fit snugly around all window and door openings.

Secure sheathing to studs with nails spaced approximately 3" on outside framing members (6" apart on intermediate framing) except where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails shall be spaced approximately 8" on centers.

Nail to intermediate studs first. Nails shall be not less than 3/8" from edges or ends of sheathing.

#### OPTIONAL INCLUSION

**1. Use of wood siding over USG Insulating Sheathing.** Apply siding directly over sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of 1/4" into the studs. End joints of siding shall be over centers of studs.

**2. Use of masonry veneer over USG Insulating Sheathing.** Masonry ties shall be attached with nails driven through the sheathing into the studs, approximately 12" on centers, vertically, using nails of sufficient length to penetrate 1/4" into the studs. (At least 6d common nails.)

**3. Use of wood, asbestos cement or slate shingles over USG Insulating Sheathing.** (1) Apply 1" x 2" wood furring strips horizontally over the sheathing spaced to correspond to the shingle exposure. Secure strips with nails driven through sheathing, using nails of sufficient length to provide at least 1/4" penetration into studs (at least 8d common). Use at least one nail at each intersection of stud and furring. (2) Refer to Sweet's catalog 12b/Un for method of attaching straight edge asbestos shingles by means of USG SHADOW-LOCK\* Attachment System.

\*T. M. Reg. U. S. Pat. Off.

# USG STRUCTURAL INSULATION

## TECHNICAL DATA

Product	Nominal Thickness	Size		Color	Edge	Wt. Per M Sq. ft.	Conductivity or Conductance
USG Ins. Building Board	1/2"	4"	6', 7', 8', 9', 10', 12'	Hi-Lite	Square	750	0.72
	1"					1500	0.36
USG Duplex* Wallboard	3/8"	4"	6', 7', 8', 9', 10', 12'	Hi-Lite	Square	600	
USG Roof Leveler	1/2"	24"	48"		Square	750	
USG Roof Insulation	1"					1600	0.36
	1 1/2"					2350	0.24
	2"					3000	0.18
USG Ins. Sheathing	25/32"	2"	8'		T & G Joint	1300	0.59
	1/2"				"V" Joint	860	0.38
	25/32"	4"	8', 9',		Square	1300	0.59
	1/2"		10', 12'			860	0.38
USG Shingle-Backer	3/8"	13 1/2"	48"		Square	600	
		15 1/2"					
		15"					
USG Ins. Plaster Base	1/2"	18"	48"	Natural	"V" Joint	750	0.72

## USG DURON HARDBOARD

### DESCRIPTION

DURON Hardboard, DURON Underlayment and STRUCTOBOARD\* consist of felted wood fiber and special plasticizing ingredients which are introduced into the fiber stock before forming. When the fibrous mat is subjected to heat and pressure, these plasticizing agents, combined with the natural wood resins in the wood fiber, develop unusual physical qualities in the finished product making hardboard a very durable material capable of taking a lot of wear and tear punishment. Treated DURON is further processed with special tempering oils and then baked. This makes it stronger, denser, harder and more water resistant.

### FUNCTION AND UTILITY

DURON Hardboard and STRUCTOBOARD has many uses in residential construction such as wainscoting over solid backing, counter tops, closet and cupboard doors, etc., and is also adaptable to almost any form of fabrication. It can be sawed, die cut, bent, punched, drilled, grooved, planed or sanded.

DURON Underlayment is especially designed as a base for linoleum, asphalt tile, cork tile, rubber tile, carpeting and other floor coverings. It may be used in either new construction over wood sub-floors, or in remodeling over all wood finished floors.

## TECHNICAL DATA

Product	Size		Pieces Per Bundle	Typical Modulus of Rupture Lbs. Per Sq. In.
1/8" Treated	4'	6', 8', 9', 10', 12'	6	9000
1/8" Regular	4'	6', 8', 9', 10', 12'	6	7000
3/16" Regular	4'	6', 8', 9', 10', 12'	6	6300
3/16" Treated	4'	6', 8', 9', 10', 12'	6	7500
1/4" Underlayment	4'	3'	8	4000
		4'	6	
1/4" STRUCTOBOARD	4'	6', 8', 9', 10', 12'	6	4000

Because DURON is a fibrous material, it is affected by atmospheric humidity. Therefore, before application, DURON sheets should be separated and exposed to the air for 24 to 48 hours.

\*T.M. Reg. U.S. Pat. Off.

# USG STRUCTURAL INSULATION

## USG ROOF INSULATION

An insulation board product, when laid over wood, concrete, gypsum or steel decks, not only provides comfort for the areas below, but acts as a foundation for the built-up roof covering. The individual fibers of USG Roof Insulation are chemically treated to make them moisture resistant. USG Roof Insulation is supplied in 24" x 48" size with square edges. Both plain fiber and asphalt treated are available in  $\frac{1}{2}$ ", 1",  $1\frac{1}{2}$ " and 2" nominal thicknesses to meet varied insulation requirements. Meets or exceeds all requirements of federal specs LLL-F-3216 class C.

## SPECIFICATIONS

### Scope

As shown on plans the following roof areas shall be insulated with fiber board rigid roof insulation.

### GENERAL

All insulation shall be kept dry during and after application. The surface of the roof deck shall be sound, broomed clean, free from dirt, reasonably smooth and thoroughly dry. Only as much USG Roof Insulation shall be laid over roof area as can be covered with finished roofing in one day. Boards shall be placed together snugly but never forced into place. Boards shall be laid in parallel courses with end joints of each course breaking with those adjoining courses.

### MATERIAL

Insulation shall be (specify thickness  $\frac{1}{2}$ "—1"— $1\frac{1}{2}$ "—2") USG Roof Insulation as manufactured by the United States Gypsum Company, laid in (one) (two) layer (s). Size shall be 24" x 48".

### VAPOR BARRIER

Vapor barriers shall be used on decks of heated buildings wherever the average January temperature is below 45°F. Vapor barriers shall be used on all buildings in which excessive moisture conditions prevail. The vapor barrier shall consist of two plies of 15 lb. felt solidly mopped together, or a simple ply of 45 lbs. per square coated asphalt roofing felt, applied with coated surface down. The vapor barrier shall be wrapped around the insulation and mopped back 6 inches at walls and other vertical projections.

### WATER CUT OFFS

The roof insulation shall be isolated in areas not greater than 30 square feet over the entire roof and at first full insulating board joint back from parapet walls or borders.

### APPLICATION—Over Wood Decks Where No Vapor Barrier is Used

Space nails 12 inches apart. Each board shall be secured in place by nailing each edge and staggered along the longitudinal center line. If two layers of insulation are used, nailing should be through both layers. Use large-headed galvanized nails (not less than  $\frac{1}{16}$  inch head) of sufficient length to pass through the insulation and penetrate the roof boards at least  $\frac{3}{4}$ ". Nails should not pass through the roof deck.

### Over Wood Roof Deck with Vapor Barrier Coal Tar Pitch

The wood deck shall be covered with red rosin sheathing paper and two plies of 15 lbs. tarred felt. Lay successive felt plies with 19" overlap and solidly mop between plies. The laps to be front nailed on 18" centers with caps and nails.

### VAPOR BARRIER—Asphalt Application

Over the entire roof apply a vapor barrier consisting of two plies of 15 lbs. asphalt felt, each sheet laid 19 inches over the preceding one, and each sheet back-nailed at intervals not to



exceed 18". Mop solidly the 19 inch lap with steep roofing asphalt.

### Alternate:

Apply a vapor barrier sheet of 45 lb. coated (both sides) asphalt roofing felt, lapping each sheet 4" and solidly cementing these laps. Nail each lap with galvanized barbed roofing nails spaced not over 2" O.C.

### Application of Insulation by Mopping

Embed each board firmly in a solid mopping of bitumen. Only sufficient area to provide complete embedment of each insulating board shall be mopped at a time. Where two layers of insulating board are to be applied, solid mop the exposed surface of the first layer liberally with hot bitumen. Embed each board of the second layer firmly in the solid mopping of bitumen.

### Application Over Concrete, Gypsum and Unit Tile

Priming the deck—If coal tar pitch is used no primer is necessary. If asphalt is used, prime the deck with asphalt primer.

### VAPOR BARRIER

A vapor barrier shall be used in all cases on poured concrete and poured gypsum decks. Apply two plies of 15 lbs. felt lapped half. Each ply shall be solidly mopped to the deck and also between plies, followed by thorough brooming down of felts. If deck is of poured gypsum, strip or center mopping shall be used. Over precast cement slabs, gypsum plank, book tile or similar units, apply (insulation board) (vapor barrier) directly to deck by spot strip or center mopping, keeping the mopping back approximately 4 inches from the joints when using pitch. If steep asphalt is used, it may be solidly mopped.

### Application of Insulation

See application by mopping.

### STEEP ROOF DECKS

On steep roof decks having a slope of 3 inches or more per foot, provision shall be made for additionally securing the roof insulation by nailing or other mechanical fastening in accordance with the roofing manufacturers' requirements.

### Application Over Steel Deck

The steel deck shall have a shop coat of paint or primer. Pitch shall not be used for bonding felt or insulation to steel decks. Application of insulation—see application by mopping.

### Steep Roof Decks

Where insulating board is applied over roof decks having a slope of 1" or more per foot, each board shall be secured to the steel deck with mechanical fasteners supplied by the deck manufacturer. Mopping of bitumen should be used to augment the mechanical fasteners.

### Application of Roofing

Built-up roofing shall be applied in accordance with manufacturer's specifications.

**TECHNICAL INFORMATION**

# RED TOP\*

## **INSULATING WOOL**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# RED TOP\* INSULATING WOOL

## DESCRIPTION

**RED TOP Insulating Wool** consists of mineral fibers mechanically formed either into a uniform mat of definite dimensions and controlled density or into a uniform pellet form suitable for pouring or blowing into framing spaces.

**RED TOP Blankets**—Are enclosed, except for mill cut ends. Face of enclosure is glossy asphalted paper, an effective vapor barrier, extending beyond the edges of the blanket to form nailing flanges. These flanges are wide enough that the edges are overlapped when applied to studs, thus forming a continuous vapor barrier. A strong, yet porous, paper on the back, completes the enclosure. See table below for sizes.

**RED TOP Nodulated Wool**—Consists of mineral fibers formed into pellets for either pouring and spreading by hand or for the installation by pneumatic methods.

## FUNCTION AND UTILITY

**High Thermal Resistance**—Conductance is 0.27 per inch thickness and Resistance 3.70 per inch thickness. See data sheet below for Resistance for given thicknesses.

**Incombustible**—The mineral fibers will not burn or support combustion.

**Resistance to Vapor Transmission**—The asphalted paper resists the passage of water vapor and protects against condensation. It has a vapor permeability factor of 1.00 perm†, which is within the limits of permeability recommended by many recognized authorities for normal building occupancy.

**Uniform Effectiveness**—Manufactured to closely controlled tolerance for density and dimension, for uniform insulation.

**Stability**—Highly resilient. Resists settling. The mineral fibers are resistant to decay, corrosion, moisture and all other forms of deterioration.

**Resistant to Vermin**—The mineral fibers offer no sustenance to vermin or rodent life.

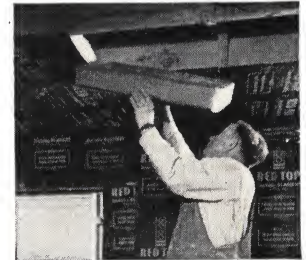
**Light Weight**—see table below.

## LIMITATIONS OF USE

**1. Masonry Walls**—It is strongly recommended that at least a 1" air space be provided between insulation and exterior masonry. Suitable weep holes are recommended. If RED TOP Wool is placed in direct contact with exterior masonry walls, the masonry must be watertight to prevent the insulation from becoming wet. The insulation is less effective and may transmit moisture to interior finishes if it becomes wet by direct contact with leaking exterior masonry.



96" length reduces cutting, speeds sidewall application, assures continuous floor to ceiling vapor barrier.



Ceiling Application



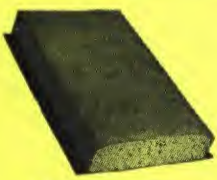

Roof Application

**2. Metal Lath and Channel Ceilings**—Suspended ceilings may be insulated with blankets installed with the vapor barrier down and all joints butted tightly together.

If preferred, granulated wool may be used for suspended ceilings and installed by a wool blowing machine. Many other types of otherwise inaccessible installations may be best served with granulated wool blown in place using blowing machine. However, a suitable vapor barrier should be provided, equal in effectiveness to the one provided with RED TOP Blankets. Many standard asphalt coated and impregnated papers, aluminum foil, good oil paints and varnishes will meet this requirement. Roofing felt is not recommended.

**3. Floors over Unexcavated Areas**—Insulating batts used between floor joists over unexcavated areas should be provided with additional support to insure a permanently effective installation. In all cases, the unexcavated area should be ventilated. (See page 4.)

## PRODUCT DATA

	Type	Approx. Thickness	Framing Spacing	Length	Approx. Weight Sq. Ft.	Conductance (1)		Resistance	
						(k)	(C)	1/k	1/C
 Enclosed Blanket	BLANKETS	Medium 2" Thick 3" Economy 1½"	16", 20" or 24" O.C.	24", 48", 96"	0.58 lbs.	0.27	0.135	3.70	7.40
				24", 48", 96"	0.87 lbs.	0.27	0.090	3.70	11.10
				96"	0.48 lbs.	0.27	0.180	3.70	5.55
 NODULATED	NODULATED	2"	Supplied in Nodulated Form (Non-Preformed Dimension)		1.00 lbs.	0.27	0.135	3.70	7.40
		4"			2.00 lbs.	0.27	0.067	3.70	14.80
		6"			3.00 lbs.	0.27	0.045	3.70	22.20

(1) Expressed in Btu per sq. ft. per hour per degree F. temperature difference. (k) is per inch thickness, (C) is for thickness stated.

# RED TOP INSULATING WOOL

## COEFFICIENTS FOR USE IN CALCULATING HEAT TRANSMISSION

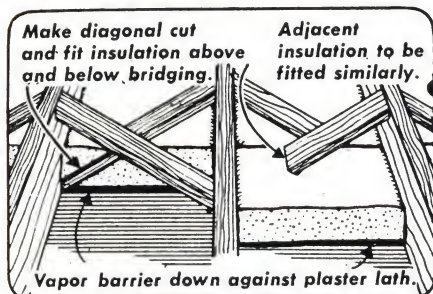
MATERIAL	DESCRIPTION	Conductivity† or Conductance		Resistance Per Inch Thickness	
		(k)	(C)	$\frac{1}{k}$	$\frac{1}{C}$
<b>AIR SPACES</b> (Bounded by ordinary materials) (With aluminum foil one side)	Vertical $\frac{3}{4}$ " or more in width		1.10 0.46		0.91 2.17
<b>EXTERIOR FINISHES</b> (Frame Walls) Brick Veneer Wood Shingles Yellow Pine Lap Siding	4" thick (nominal)		2.27 1.28 1.28		0.44 0.78 0.78
<b>INTERIOR FINISHES</b> Gypsum Plaster Gypsum Board— $\frac{1}{2}$ " Gypsum Lath & Plaster Insulating Board Plaster Base, $\frac{1}{2}$ " Thick Metal Lath and Plaster Wood Lath and Plaster	Plain or Decorated Plaster Thickness $\frac{1}{2}$ "  Plaster Thickness— $\frac{1}{2}$ " Plaster Thickness— $\frac{3}{4}$ "	3.30  0.33	2.82 2.40 0.60 4.40 2.50	0.30  3.03	0.35 0.42 1.67 0.23 0.40
<b>MASONRY MATERIALS</b> Brick Brick 3" Clay Tile (Hollow) 4" Clay Tile (Hollow) 6" Clay Tile (Hollow) 8" Clay Tile (Hollow) 10" Clay Tile (Hollow) 12" Clay Tile (Hollow) Concrete Concrete 3" Concrete Blocks 4" Concrete Blocks 8" Concrete Blocks 12" Concrete Blocks 8" Concrete Blocks 12" Concrete Blocks 3" Gypsum Tile 4" Gypsum Tile	Common Face 1 Air Cell Direction Heat Flow 1 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow 2 Air Cell Direction Heat Flow 3 Air Cell Direction Heat Flow Light Weight Aggregate Sand and Gravel Aggregate Hollow—Cinder Aggregate Hollow—Cinder Aggregate Hollow—Gravel Aggregate Hollow—Gravel Aggregate Hollow—Cinder Aggregate Hollow—Cinder Aggregate Hollow Hollow	       2.50 12.00	1.25 2.30 1.28 1.00 0.64 0.60 0.58 0.40  1.28 1.00 1.00 0.80 0.60 0.53 0.61 0.46	0.40 0.08	0.80 0.43 0.78 1.00 1.57 1.67 1.72 2.50  0.78 1.00 1.00 1.25 1.66 1.88 1.64 2.18
<b>ROOFING MATERIALS</b> Asphalt Shingles Built-up Roofing Heavy Roll Roofing Wood Shingles	Assumed Thickness— $\frac{3}{8}$ "		6.50 3.53 6.50 1.28		0.15 0.28 0.15 0.78
<b>SHEATHING</b> Gypsum— $\frac{1}{2}$ " Insulating Board— $25/32$ " Fir & Yellow Pine (1")	Actual Thickness— $25/32$ "		2.82 0.42 1.02		0.35 2.37 0.98
<b>SURFACES</b> Still Air 15 MPH Wind Velocity	Ordinary Non-Reflective Materials Ordinary Non-Reflective (Vertical) Mat'ls.		1.65 6.00		0.61 0.17
<b>WOODS</b> Maple or Oak Yellow Pine or Fir Fir Sheathing—Building Paper and Yellow Pine Lap Siding		1.15 0.80	  0.50	0.87 1.25	  2.00

†Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness of construction stated, not per inch of thickness.

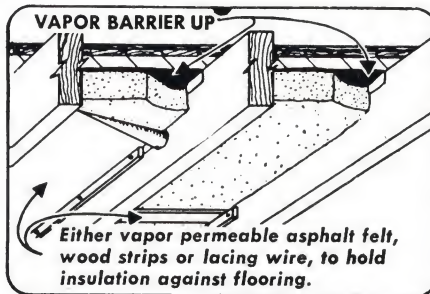
# RED TOP INSULATING WOOL

## HOW TO APPLY RED TOP INSULATING WOOL

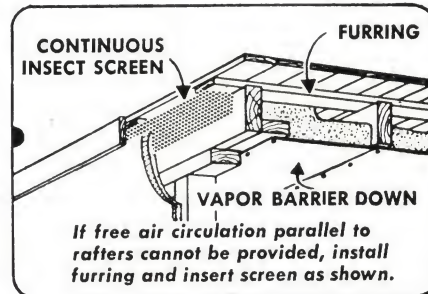
### CEILING JOISTS (over heated areas)



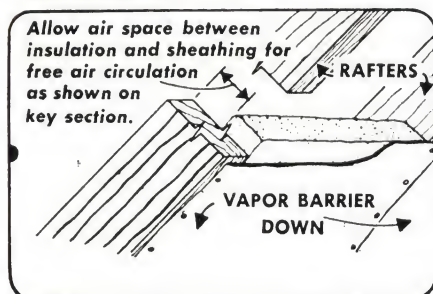
### CEILING JOISTS (over unheated areas)



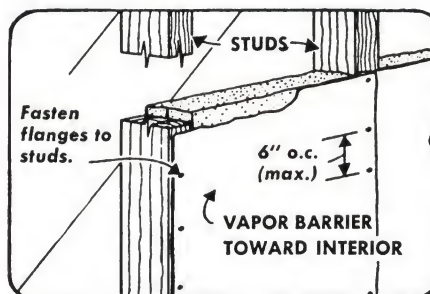
### RAFTERS (flat roof or ceiling)



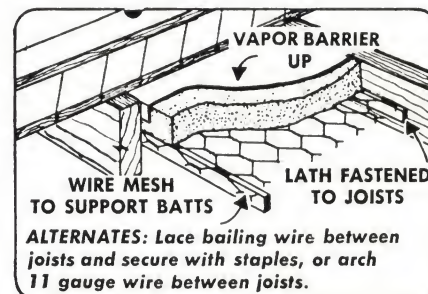
### RAFTERS (pitched roof)



### SIDEWALLS



### FLOOR JOISTS (over unexcavated areas)



## VENTILATION

**Attics**, natural ventilation through at least two fixed vents or louvers should be provided in unfinished attics or closed-off spaces between the insulation and roof, both to reduce moisture in those spaces during winter, and to vent heated air in summer. In every installation, vents should be located to insure complete ventilation of the space under consideration.

Tests at the University of Minnesota Experiment Station have established the following minimum ventilation areas:

**For gable or hip roofs**, there should be at least two vents, jointly providing not less than 1 square foot of free inlet and 1 square foot of free outlet area for every 300 square feet of attic floor area.

**Under flat roofs**, the inlet and outlet vents should each be not less than 1 square foot of free air area for every 150 square feet of roof area. If the space has small vertical clearance and large horizontal area, mechanical ventilation may be necessary. This should not be less than 6 cubic feet per hour, per square foot of horizontal area under the roof.

**Basements and crawl spaces**, under buildings, the minimum vent areas should total 2 square feet per 100 lineal feet of building perimeter, plus  $\frac{1}{3}$  of 1 per cent of the ground area covered. Good practice also includes:

1. At least 4 vent openings, one near each corner of the building.
2. These openings should be placed as high as possible from the ground, close to the bottom of the floor joists.

3. Vents should remain open all year round. This is important.

4. In very cold climates, insulation should be installed under the floor and around exposed pipes and duct work.

Special treatment should be given ground areas under buildings located over damp or wet earth. This is true whether there is a basement or not. Concrete basements should be waterproofed. Exposed earth should be covered with 55 pound asphalt-coated roll roofing, with all joints well lapped and ground underneath well drained. Even when the ground cover is used, at least 10% of the minimum basement and crawl-space ventilation recommended here should be used.

Where vents are protected by screens or rain louvers, whether in basement or attic, the net vent areas recommended should be maintained by increasing the size of the openings as follows:

TYPE OF COVERING	SIZE OF OPENING
$\frac{1}{4}$ " hardware cloth	1 times net vent area
8-mesh screen	$1\frac{1}{4}$ times net vent area
16-mesh screen	2 times net vent area
$\frac{1}{4}$ " hardware cloth and rain louvers	2 times net vent area
8-mesh screen and rain louvers	$2\frac{1}{4}$ times net vent area
16-mesh screen and rain louvers	3 times net vent area

## INSULATION SPECIFICATIONS

### SCOPE

Unless otherwise shown on plans, all insulation shall be furnished and installed according to these specifications.

### MATERIAL

Insulation shall be (delete those not applicable to the project) Thick RED TOP Insulating Wool Blankets.

Medium RED TOP Insulating Wool Blankets.

RED TOP Insulating Wool Nodulated.

All as supplied by the United States Gypsum Company.

### APPLICATION

Insulating Wool Blankets shall be installed within the stud spaces of all exterior walls and between the framing members of the top floor ceiling or roof by (1) attaching the flanges of the wool blanket to the face of the framing members, (2) recess the blanket and tack the flanges to the sides of studs or joists. The asphalted vapor barrier shall face the inside of the building and the nailing flanges shall be tacked or stapled

securely. Sufficient tacks or staples shall be used to avoid gaps or bulges in the vapor barrier paper. In no case, shall they exceed a spacing of 6" on centers. Apply Insulation in all framing spaces as specified and, where necessary, the insulation and vapor barrier shall be cut to fit in a neat and workmanlike manner.

The contractor shall be responsible for breaks or tears in the vapor barrier. All such breaks or tears shall be repaired by cementing over each break, with asphalt, a piece of vapor barrier paper, cut to extend at least 6" from the break in all directions.

**Floor Insulation**—For insulation between floor and unexcavated space, the "Application" portion of the specification shall be changed to include this work, and the following paragraph should be added:

"RED TOP Wool Blankets or Batts shall be held and supported from the underside of the floor joists by galvanized wire mesh or other moisture-resistant material.

**TECHNICAL INFORMATION**

# SOUND CONTROL

## **PRODUCTS**



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES — 300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS



# SOUND CONTROL PRODUCTS—Cont.

Efficiency (Noise Reduction Coefficient Spec. Range)	N.R.C. varies from .60 to .80 (See Technical Data Page 23)	White or Ivory.	71% when painted white.	"Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Maintenance	Limitations
N.R.C. varies from .65 to .80 (See Technical Data Page 23)	White or Ivory.	81% when painted white.	"Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Should not be used in areas of very high humidity or where water might repeatedly impinge against the surface.	Washable	Repaintable
N.R.C. varies from .50 to 1.00 (See Technical Data Page 23)	Painted White	"Incombustible"	Washable	Should not be used against the surface.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Repaintable	Repaintable
N.R.C. varies from .55 to .70 (See Technical Data Page 24)	Painted White	76%	"Combustible"	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Painted White	79%
N.R.C. varies from .45 to .65 (See Technical Data Page 24)	Painted White	76%	"Combustible"	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Painted White	76%
N.R.C. varies from .80 to .90 (See Technical Data Page 25)	Normally painted WHITE. Also available in blue-gray or gray-green colors.	76%	"Incombustible"	Washable	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below waistcoat height or exposed to impact, abrasion or tampering.	Repaintable	Repaintable

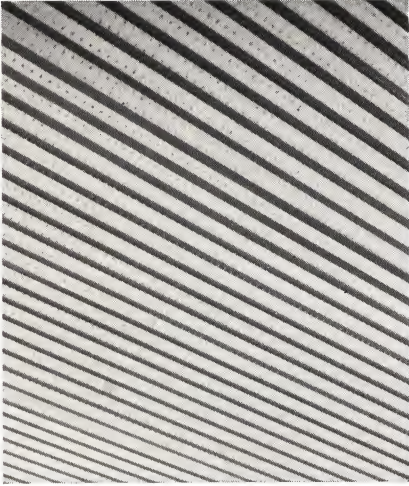

## SOUND CONTROL PRODUCTS—Cont.

Efficiency (Noise Reduction Coefficient Spec. Range)	Colors Available	Light Reflection Coefficient	Fire Resistance Rating Fed. Spec. SS-A-118a	Maintenance	Limitations
N.R.C. varies from .60 to .80 (See Technical Data Page 23)	White or Ivory.	71% when painted white.	"Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from .65 to .80 depending on thickness of tile and type of installation. (See Technical Data Page 23)	White or Ivory.	81% when painted white.	"Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from .90 to 1.00 (See Technical Data Page 23)	Painted White		"Incombustible"	Washable Repaintable	Should not be used in areas of very high humidity or where water might repeatedly impinge against the surface.
N.R.C. varies from .55 to .70 depending on thickness of tile and type of installation. (See Technical Data Page 24)	Painted White	76%	"Combustible"  Rated "Slow Burning" when mill-finished with USG Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from .50 to .85 depending on thickness of tile and type of installation. (See Technical Data Page 24)	Painted White	79%	"Combustible"  Rated "Slow Burning" when mill-finished with USG Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from .45 to .65 depending on thickness of tile and type of installation. (See Technical Data Page 24)	Painted White		"Combustible"  Rated "Slow Burning" when mill-finished with USG Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from .80 to .90 (See Technical Data Page 25)	Normally painted WHITE. Also available in blue-gray or gray-green colors.	76%	"Incombustible"	Washable Repaintable	Use Aluminum PERFATONE Pans with galvanized fittings in areas of very high humidity or where water might repeatedly impinge against the surface.

# SOUND CONTROL PRODUCTS

MECHANICAL SUSPENSION OF ACOUSTICAL MATERIALS	Details	Specifi- cations	Z-Splines Attached to	Type of Acoustical Tile	Efficiency of Construction (Noise Reduction Coefficient Spec. Range)
<b>Concealed Z-Spline Method (Mounting No. 7)</b>  	Page 11	Pages 26 & 27	Carrying Channels	$\frac{7}{8}$ " x 12" x 12" MOTIF'D ACOUS- TONE, mineral acoustical tile or $\frac{7}{8}$ " x 12" x 24" ACOUSTONE "F", square or bevel edge.	MOTIF'D ACOUSTONE =.70 to .80 ACOUSTONE "F" =.70 to .80 (See Technical Data Page 23)
	Page 13	Pages 26 & 27	Directly to Bar Joists		
	Page 14	Pages 26 & 27	Directly to Wood Framing		
<b>E-Z-S Suspension System (Mounting No. 7)</b>  	Page 12	Pages 26 & 27	Carrying Channels	$1\frac{1}{16}$ " x 12" x 24" ACOUSTONE "F" or $\frac{7}{8}$ " x 12" x 24" ACOUSTONE "F", mineral acoustical tile. Square edge.	$1\frac{1}{16}$ " ACOUS- TONE "F"=.65 to .75 $\frac{7}{8}$ " ACOUSTONE "F"=.70 to .80 (See Technical Data Page 23)
	Page 13	Pages 26 & 27	Directly to Bar Joists		
	Page 14	Pages 26 & 27	Directly to Wood Framing		

# SOUND CONTROL PRODUCTS

MECHANICAL SUSPENSION OF ACOUSTONE—Cont.	Details	Specifi- cations	Z-Splines Attached to	Type of Acoustical Tile	Efficiency of Construction (Noise Reduction Coefficient Spec. Range)
<b>CORRUTONE</b> <b>E-Z-5 Suspension System</b> <b>(Mounting No. 7)</b> 	Page 17	Pages 26 & 27	Carrying Channel	$1\frac{5}{16}"$ to $2\frac{5}{16}"$ x $24" \times 24"$ or $24" \times 48"$  Corrugated Metal Acoustical Panels	$2\frac{5}{16}"$ Unit = .80 to .90 $1\frac{5}{16}"$ Unit = .90 to 1.00 (See Technical Data, Page 23.)
	Page 14	Pages 26 & 27	Direct to Bar Joist		
	Page 15	Pages 26 & 27	Direct to Wood Framing		
<b>SUSPENSION OF USG Z-BOARD ON Z-SPLINES</b> <b>(Mounting No. 1)</b> 	Page 16	Pages 26 & 28	Carrying Channel  Directly to Bar Joist  Directly to Wood Furring	<b>Adhesive Method</b>  All $12" \times 12"$ MOTIF'D ACOUSTONE or ACOUSTONE "F"  All $12" \times 12"$ or $12" \times 24"$ SLOTTED, PERFORATED, OR RANDOM PERFORATED AUDITONE Wood Fiber Acoustical Tile	Varies from .60 to .75 depending on thickness of tile and type of installation. (See Technical Data, Pages 23 and 24.)
				<b>Screwed to USG Z-Board</b>	
				All $12" \times 24"$ SLOTTED or PERFORATED AUDITONE Wood Fiber Acoustical Tile	

# SOUND CONTROL PRODUCTS

## MOTIF'D ACOUSTONE TILE



**STRIATED** design No. 19 R&L



**GALAXY** design No. 33

### DESCRIPTION

**Motif'd Acoustone** mineral acoustical tile, is produced by altering the surface of standard ACOUSTONE "F" tile by an exclusive USG process resulting in an integrally permanent decoration as selected by the designer. The finished product is mill painted. The pattern selected is accented by the varying shadows which the surface alterations cause with directional changes in the source of light rather than by differences in applied color.

### Sizes

**Motif'd Acoustone** is available in 12"x12" units; 11/16" or 7/8" thick; with square edges only, kerfed for splines.

### Light Reflection

**Motif'd Acoustone** painted white has a light reflection coefficient of 71% as tested by A.M.A. Laboratories.

### Designs

The standard patterns illustrated on this page and page 7 are available. These patterns provide the designer a wide range of beautiful and unusual decorative effects. Custom designs can be produced to meet individual requirements.

### Methods of Installation

**Motif'd Acoustone** may be cemented to an existing ceiling or a gypsum board base. (See Methods of Installation pages 9 and 15.)

**Motif'd Acoustone** in 12"x12" units may also be mechanically suspended (7/8" thickness only) on the Concealed Z-Spline Method. (See details pages 10, 11 and 14.)

### HOW MOTIF'D ACOUSTONE PATTERNS WORK

The unretouched photographs below were made of the same section of an installation of MOTIF'D ACOUSTONE tile, but under two different lighting conditions. The upper picture shows contrast or color difference obtained under normal lighting; the lower picture shows how the contrast is reversed when light was shifted 180 degrees from that used in the upper view.

Such changes in degrees of contrast are usually apparent in every MOTIF'D ACOUSTONE installation. This "mobile" effect shifts, not only with light changes, but with changes in position of the observer. The pattern never becomes monotonous.



# ACOUSTONE

## MOTIF'D ACOUSTONE DESIGNS

Motif'd Acoustone tile ceiling designs are shown used alone or in combination with standard ACOUSTONE "F". The ACOUSTONE "F", mineral acoustical tile, used as border tile can be made more or less than 12" wide by extending 12" border units and job cutting to balance the field design. All units furnished in 12" x 12" size, kerfed for spline alignment. Use on walls below wainscot height is not recommended.



**GROSGRAIN** design No. 37



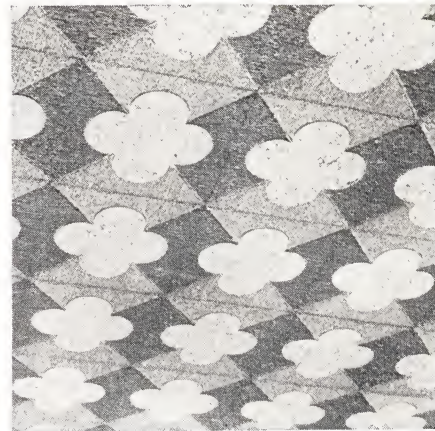
**GEORGIAN** design No. 2 R&L



**MEDALLION** design No. 10 R&L



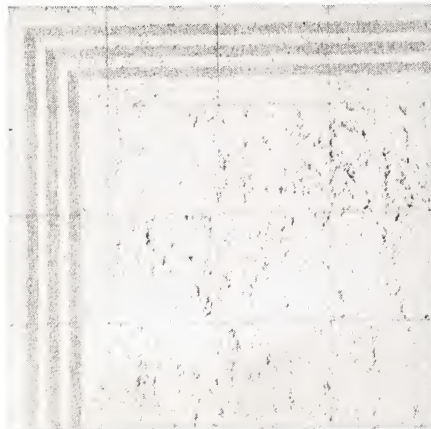
**STRIATED** design No. 19 R&L



**CLOVER LEAF** design No. 5



**BORDER** Design No. 32 B



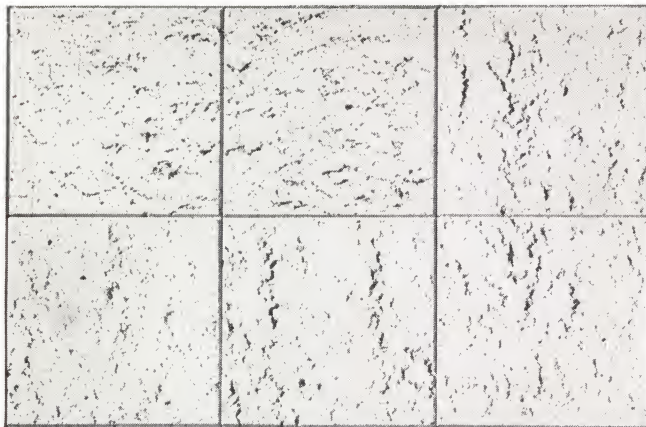
**OUTLINE** design No. 32 A



**TEXTURA** design No. 36

# ACOUSTONE

## ACOUSTONE "F"



Bevel ACOUSTONE "F"—Conventional joints



Square Edge ACOUSTONE "F"—Inconspicuous joints

### DESCRIPTION

ACOUSTONE "F", mineral acoustical tile, is manufactured by binding mineral fibers into a light-weight, highly sound absorbent tile form. The fissured surface closely resembles that of Travertine marble. No two tiles are identical in texture; the pattern is as natural as the veining of fine marble or the grain of wood. Each tile is finish-painted at the factory. Available with accurately formed bevel or square edges.

### Sizes

ACOUSTONE "F" is available in  $1\frac{1}{16}$ " and  $\frac{7}{8}$ " thicknesses in 12"x12" or 12"x24" sizes with square or bevel edges.

### Light Reflection

ACOUSTONE "F" painted with a standard White finish has a light reflection of 81%.

### Texture

ACOUSTONE "F", mineral acoustical tile, is furnished in a texture range that provides a beautiful surface easily maintained by ordinary methods of cleaning and re-decorating.

### Methods of Installation

ACOUSTONE "F" can be applied with adhesive to a prepared base, such as plaster or gypsum board, or it can be supported by a suspended metal grillage, bar joists or wood framing using the Z-Spline Suspension Systems. If access is desired to the area above the ceiling, the E-Z-S Suspension System is used. Where access is not required to the area above the ceiling, the Z-Spline is concealed in the kerf of the individual tiles, providing a smooth, level surface.

## FUNCTION AND UTILITY

### Motif'd Acoustone and Acoustone "F"

#### Sound Absorption

Sound absorption depends upon the thickness of the tile and upon the mounting. MOTIF'D ACOUSTONE and ACOUSTONE "F" are made in  $1\frac{1}{16}$ " and  $\frac{7}{8}$ " thickness. The adhesive application is designated as the No. 1 mounting and the suspended acoustical units on the Z-Spline System are designated as the No. 7 mounting. (See Technical Data on page 23 for sound absorption values.)

#### Colors

The face side and exposed bevels of ACOUSTONE "F" and MOTIF'D ACOUSTONE are painted at the factory with full finish coat of either white or ivory paint.

#### Washability

Factory-painted MOTIF'D ACOUSTONE and ACOUSTONE "F" may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, used dry, or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by this method before over-all redecoration is necessary.

#### Paintability

MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, may be brush or spray painted many times without loss of sound absorption at 500 cycles per second or in the Noise Reduction

Coefficient. The effect of repeated coats of paint on ACOUSTONE "F" and other materials may be found in Research Paper RP-1298 "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Oil, casein, resin emulsion or spirit thinned paint or rubber base paints may be used with normal painting procedures.

#### Resistance To Soiling and "Breathing"

The smooth, painted finish of MOTIF'D ACOUSTONE and ACOUSTONE "F" resists soiling and limits objectionable air travel ("breathing") through the face of the tile.

#### Thermal Conductivity

MOTIF'D ACOUSTONE and ACOUSTONE "F" have a thermal conductivity factor of  $k=0.35$ .

### LIMITATIONS

MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tiles, are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. ACOUSTONE should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard.

# MOTIF'D ACOUSTONE AND ACOUSTONE "F" TILE

## INSTALLATION METHODS

### I. ADHESIVE APPLICATION:

- A. To Plastered Ceilings.
- B. To USG Gypsum Boards.
- C. To Concrete Slabs. (See note; adhesive application not recommended.)
- D. Wood (See note; adhesive application not recommended.)

### 2. MECHANICALLY SUSPENDED:

- A. Concealed Z-Splines
  - 1. Attached to carrying channels.
  - 2. Directly Attached to Bar Joists.
  - 3. Directly Attached to Wood Furring.
- B. E-Z-S Suspension System
  - 1. Attached to carrying channels.
  - 2. Directly attached to Bar Joists.
  - 3. Directly attached to Wood Furring.

### I. ADHESIVE APPLICATION

Application with adhesive is the most widely used method and is recommended where a suitable base exists.

Adhesive.

See Architectural Specifications, page 26, for description and type of adhesive recommended.

Size of Units.

Tile should not exceed 12"x12" for ceilings or 12"x24" for walls.

### BASES FOR ADHESIVE APPLICATION

#### A. PLASTER

1. On *new work*: a full thickness of rodded brown coat of gypsum plaster in a clean, dry, level state provides an excellent base.

**Caution:** *New lime putty* finish may have free lime on the surface which can cause saponification of oils and resins in the adhesive. For this finish a combination of adhesive and nailing is recommended.

On *existing work*:

a. *Old lime putty finish* that has been in place for a year or more offers a good base if the finish is well bonded to the base coat of plaster. If it is not well bonded, consider the application of Z-Splines attached to wood furring strips with No. 90 Clips. (Note mechanical suspension systems and details on page 14.)

b. A good quality paint well bonded to sound plaster and in place not less than 6 months will usually give excellent results.

c. Calcimine over a good varnish size or over an old, well bonded paint will usually give good results where underlying plaster is sound.

**Caution:** Hard oil (sometimes called gloss oil) when used as a size for calcimine may react with the solvents of the adhesive and therefore is an unsatisfactory base. In this case, a combination of nailing and adhesives must be used. The acoustical contractors can determine by job testing when to augment the adhesive with nailing.

#### B. ACOUSTONE CEMENTED TO GYPSUM BOARDS

Where an incombustible base is required, MOTIF'D ACOUSTONE and ACOUSTONE "F" can be adhesively applied to USG Z-Board, SHEETROCK\* Gypsum Wallboard or ROCKLATH\* Gypsum board bases. They may be installed by the following methods:

1. USG Z-Board (Treated Core) SHEETROCK ROCKLATH	Nailed to Wood Strips
2. USG Z-Board (Treated Core)	Suspended on Z-Splines

**Caution:** The use of ROCKLATH without plaster is not recommended where job conditions, particularly moisture conditions, are unsuitable. Accordingly, ACOUSTONE, mineral acoustical tile, shall be applied to such a base only when the installation of the base is made under the supervision of and to the satisfaction of the USG acoustical contractor.

#### C. CONCRETE SLABS

**Caution:** Since it is not always possible to determine the condition of the concrete surface, the adhesive application of any acoustical tile to a concrete slab is not recommended. (For a more economical and secure method of attaching MOTIF'D ACOUSTONE or ACOUSTONE "F" to concrete slabs, see architectural specifications, pages 25, 26 and 27 and details page 14, "ACOUSTONE suspended on Z-Splines directly attached to wood furring strips.")

#### D. WOOD

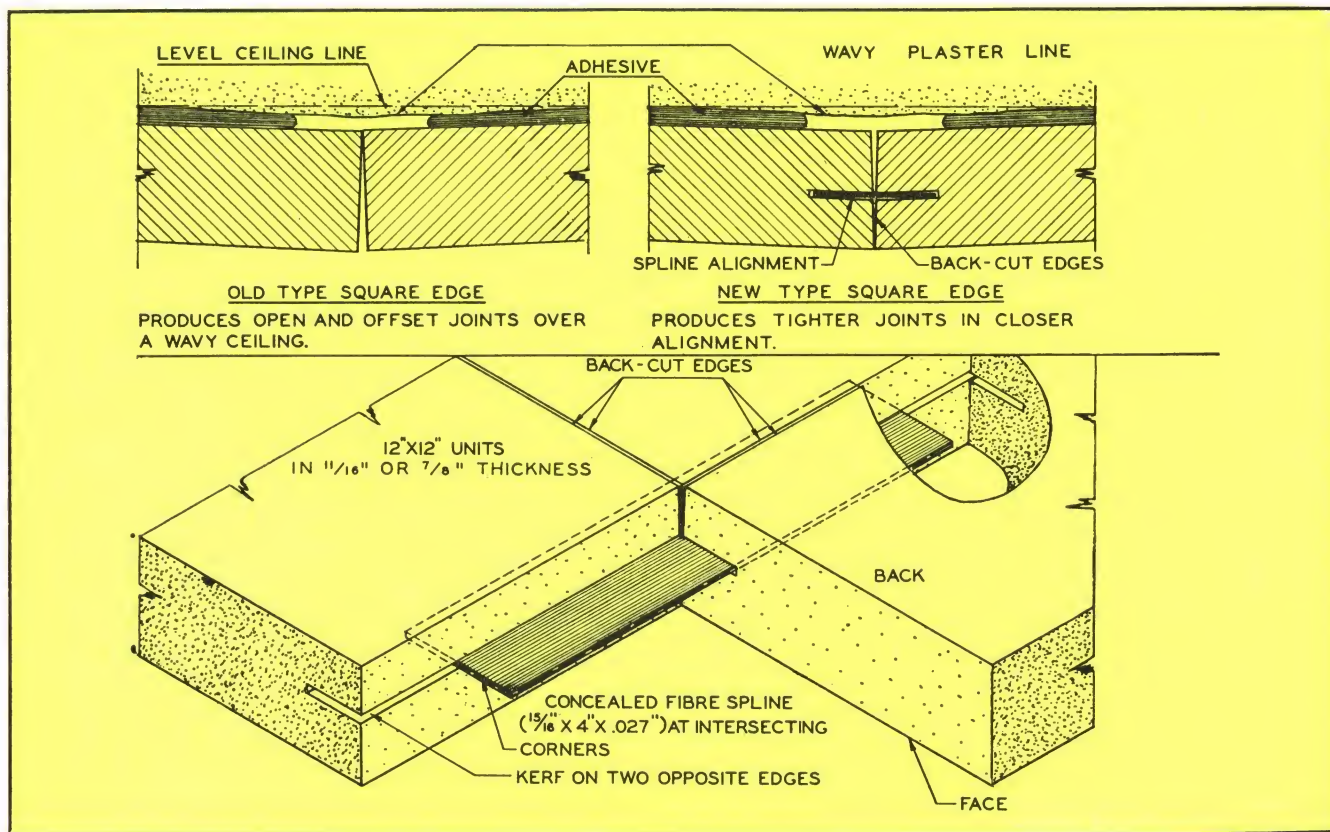
**Caution:** The adhesive application of MOTIF'D ACOUSTONE and ACOUSTONE "F" directly to wood strips or plywood is not recommended. (For a more economical and secure method of attaching ACOUSTONE to wood furring strips, see architectural specifications, pages 26, 27 and 28 and details page 14, "ACOUSTONE suspended on Z-Splines directly attached to wood furring strips.")

### DATA FOR GYPSUM BOARD BASES

TRADEMARK	STANDARD SIZES			Approx. Wt. Per Sq. Ft.	Spacing of 1" x 3" Wood Strips	Approx. Spacing of Nails
	Thickness	Width	Lengths			
SHEETROCK (Plain)	1/2"	48"	6', 7', 8', 9', 10', 12'	2.1 lb.	16" to 24"	7"
SHEETROCK (Plain)	3/8"	48"	6', 7', 8', 9', 10', 12'	1.6 lb.	16"	7"
USG Z-Board	1/2"	24"	8' 0"	2.1 lb.	16" to 24"	8"
ROCKLATH (Plain—do not use perforated)	3/8"	16"	48"	1.6 lb.	16"	4"

Do not exceed spacings of supports as shown in the table and do not use gypsum board less than 3/8" thick.

# ACOUSTONE



## 2. MECHANICALLY SUSPENDED

**1. Concealed Z-Splines.** (See details page 11 and specifications on pages 26 and 27.)

Use  $\frac{7}{8}$ "x12"x12" MOTIF'D ACOUSTONE or  $\frac{7}{8}$ "x12"x24" ACOUSTONE "F", mineral acoustical tile. This method offers an economical, simple, rigid construction and permits the use of flush joints.

This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

**2. E-Z-S Suspension System.** (See details page 12 and specifications on pages 26 and 27.)

Use 11/16" or  $\frac{7}{8}$ " thick 12"x24" ACOUSTONE "F" with square edges. This method is used where access is required to the area above the ceiling for adjusting valves, electrical equipment, controls of air conditioning equipment, or for other reasons.

Because of its ease of installation, this method is economical and provides a low cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed easily and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of ACOUSTONE. This permits maximum flexibility of lighting arrangement.

**3. Z-Splines Attached To Wood Furring Strips.** (See details page 14 and specifications on pages 26, 27 and 28.)

This method is particularly adaptable to those existing ceilings where the surface is in such condition that it is impossible to attach MOTIF'D ACOUSTONE or ACOUSTONE "F" tile by cementing.

This system is installed by nailing wood furring strips, maximum spacing of 4'-0" on centers for the concealed method or 5'-0"

on centers for the E-Z-S system, and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.

Either of the following finished MOTIF'D ACOUSTONE or ACOUSTONE "F" ceilings is available with this method.

- Using  $\frac{7}{8}$ "x12"x12" MOTIF'D ACOUSTONE or  $\frac{7}{8}$ "x12"x24" ACOUSTONE "F" kerfed for the Concealed Z-Spline Method; refer to Concealed Z-Spline Method (No. 1) this page.
- Using either 11/16" or  $\frac{7}{8}$ " thick 12"x24" ACOUSTONE "F" kerfed for the E-Z-S Suspension System; refer to E-Z-S Suspension System (No. 2) this page.

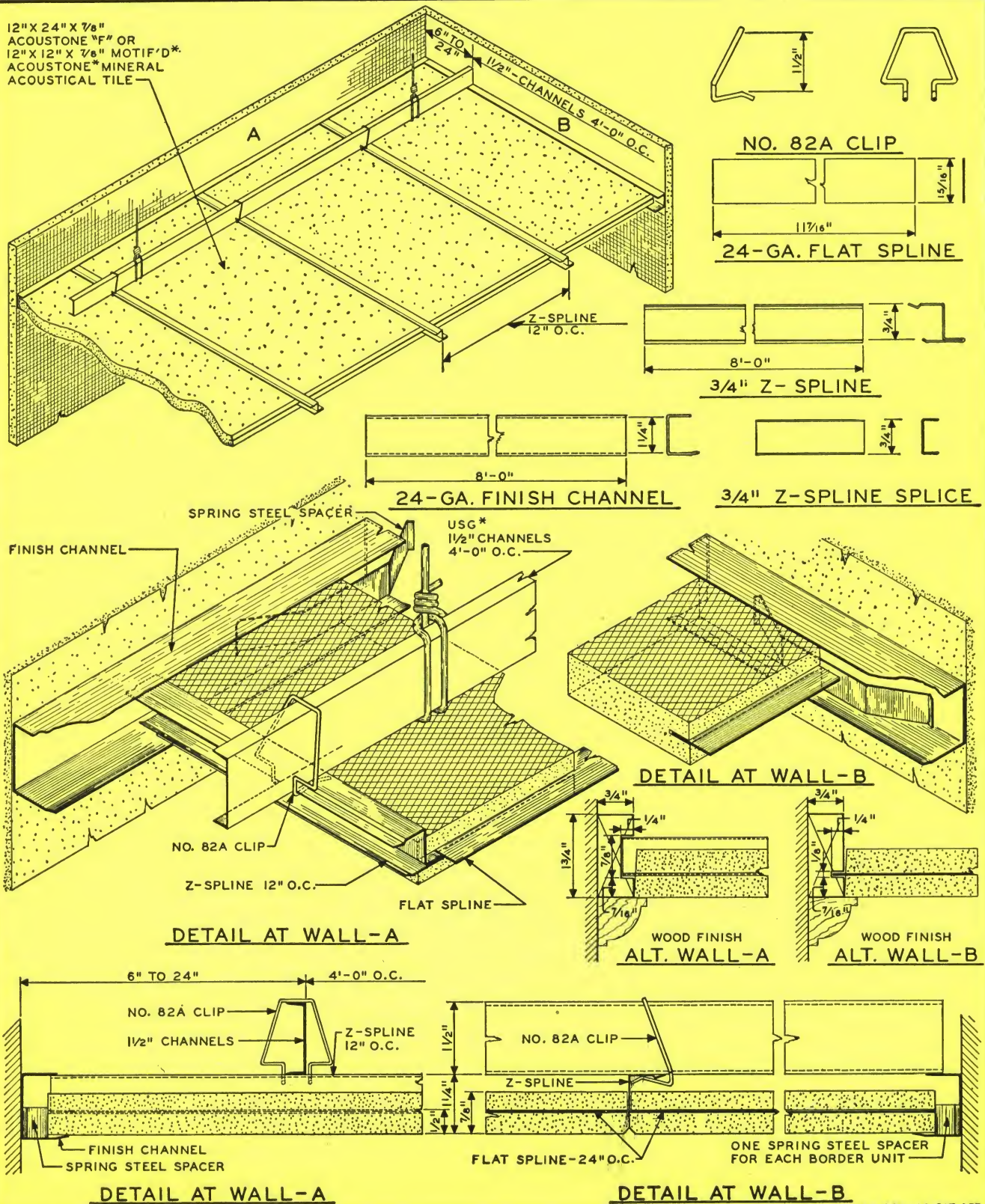
**4. Z-Splines Directly Attached To Bar Joists.** (See details page 13 and specifications on pages 26, 27 and 28.)

The USG No. 85 Clip is used to attach Z-Splines directly to conventional type bar joists of which the lower chord has a maximum width of  $3\frac{1}{4}$ " and height of  $1\frac{1}{2}$ " and with joists spaced not over 5'-0" on centers. Use No. 87-S Clips with bar joists where the width of the lower chord is between  $3\frac{1}{4}$ " and  $4\frac{1}{4}$ " and its height is between  $1\frac{1}{2}$ " and  $2\frac{1}{2}$ ". This clip eliminates the additional expense of installing channels below the bar joists prior to attaching the Z-Splines. It is a very economical method of mechanically suspending Motif'd Acoustone and Acoustone "F" to bar joist ceiling construction by either of the following systems:

- Using  $\frac{7}{8}$ " x 12" x 12" Motif'd Acoustone or  $\frac{7}{8}$ " x 12" x 24" Acoustone "F", mineral acoustical tile, kerfed for the Concealed Z-Spline Method; refer to Concealed Z-Spline (No. 1) this page.
- Using 11-16" or  $\frac{7}{8}$ " Acoustone "F" kerfed for the E-Z-S Suspension System; refer to E-Z-S Suspension System (No. 2) this page.

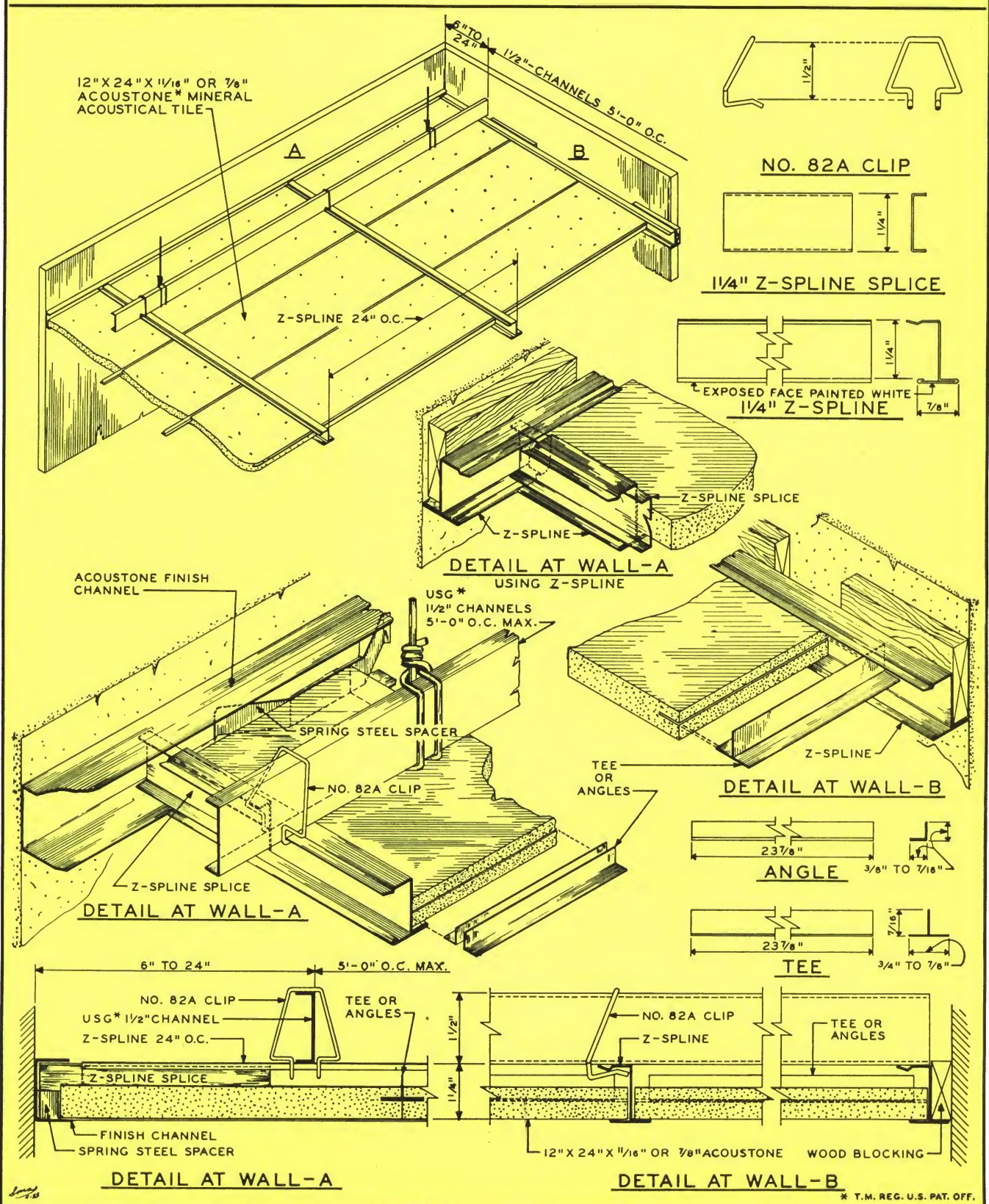
# ACOUSTONE-DETAILS

## MECHANICAL ERECTION OF ACOUSTONE TILE ON CONCEALED Z-SPLINE



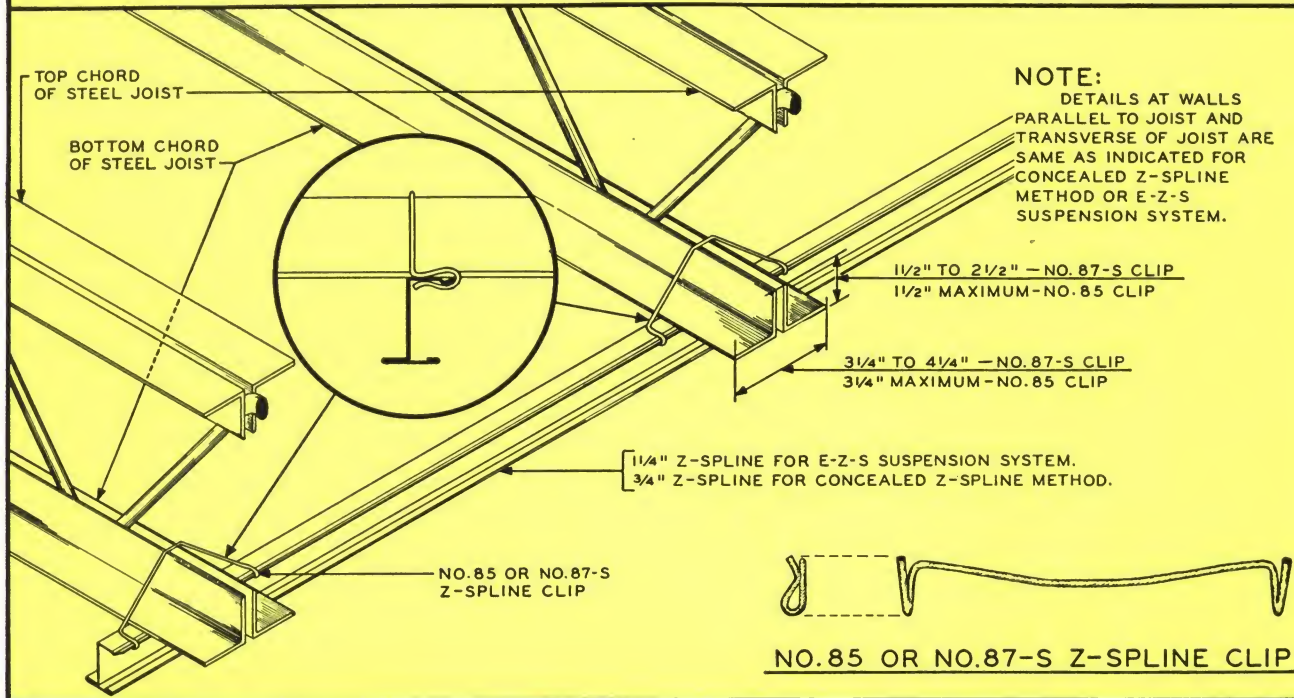
# ACOUSTONE-DETAILS

## MECHANICAL ERECTION OF ACOUSTONE TILE ON E-Z-S SUSPENSION SYSTEM

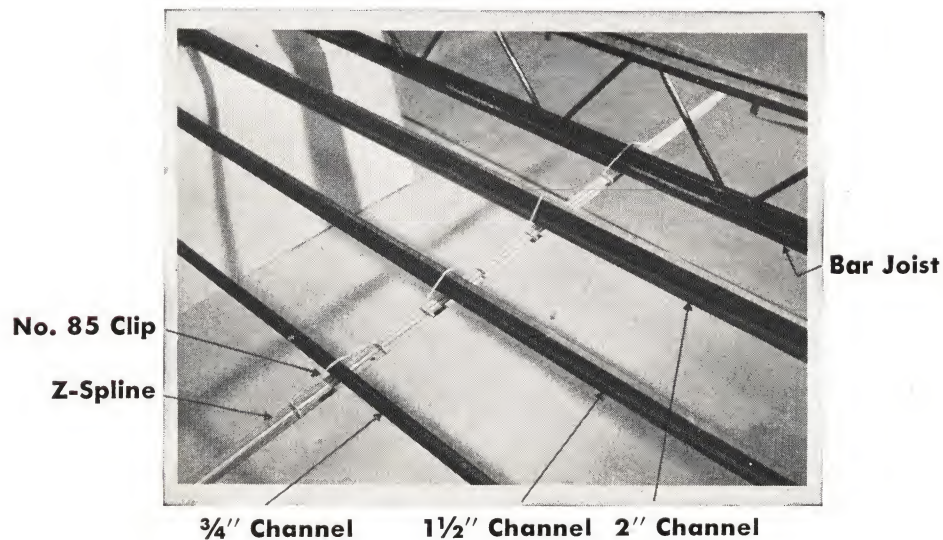


# ACOUSTONE AND CORRUTONE DETAILS

## ACOUSTONE TILE SUSPENDED ON Z-SPLINES DIRECTLY ATTACHED TO BAR JOISTS

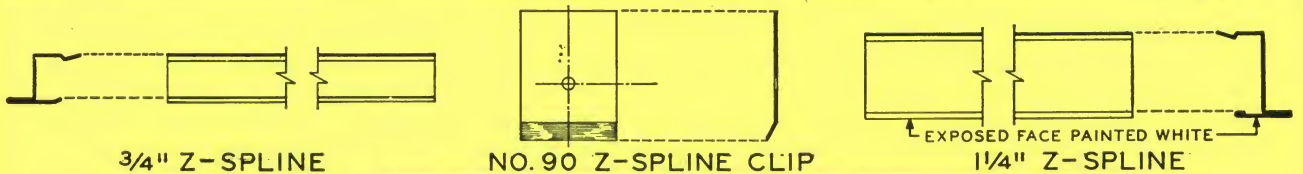


Example showing universal use of USG No. 85 Clip attaching Z-Splines directly to Bar Joists and 2", 1 1/2" or 3/4" carrying channels.

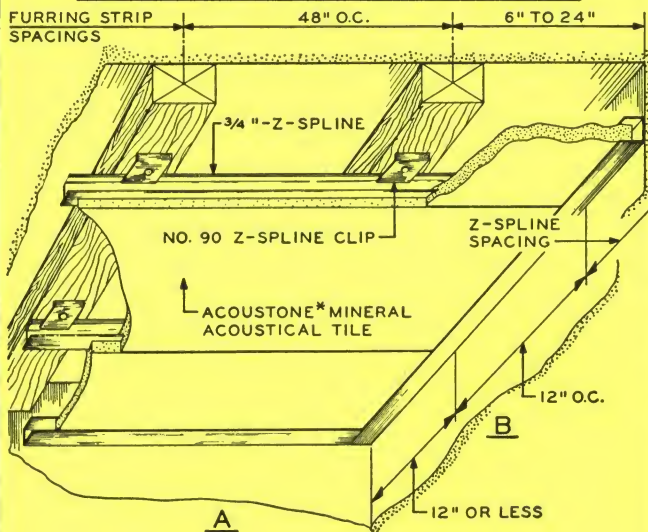


# ACOUSTONE-DETAILS

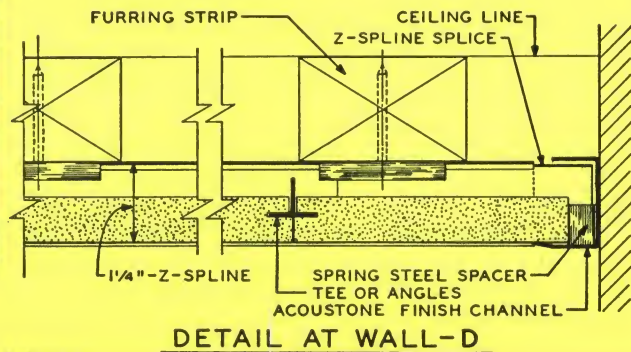
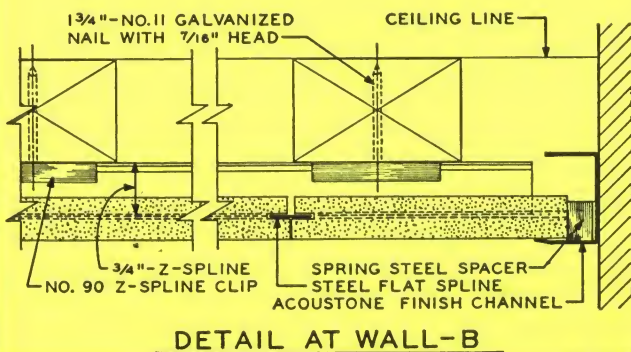
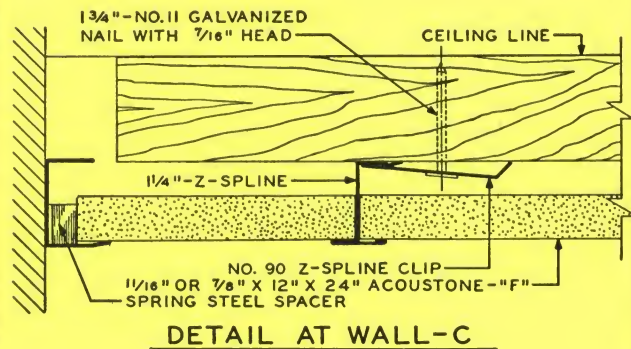
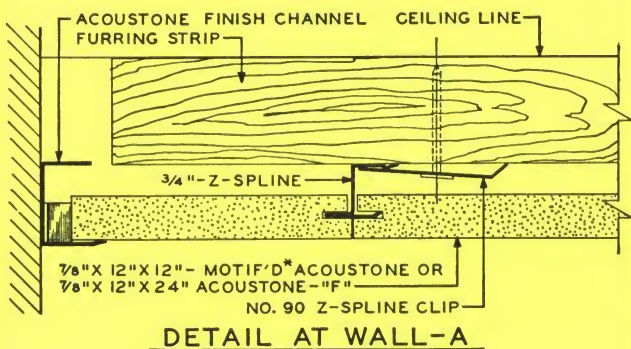
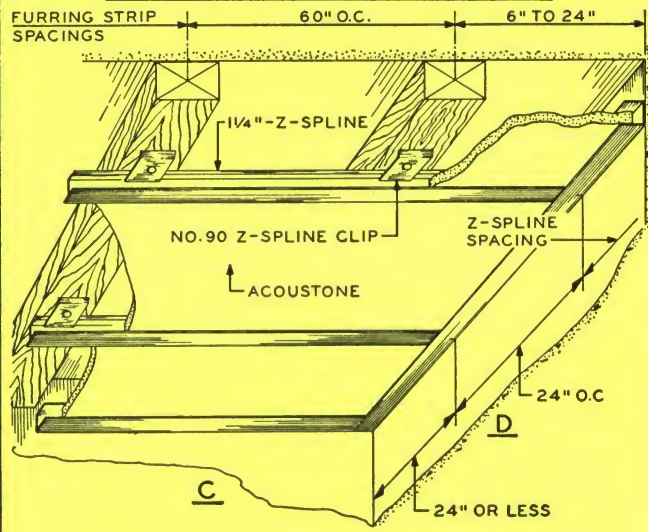
## ACOUSTONE TILE SUSPENDED ON Z-SPLINE DIRECTLY ATTACHED TO WOOD FURRING STRIPS



### CONCEALED Z-SPLINE METHOD



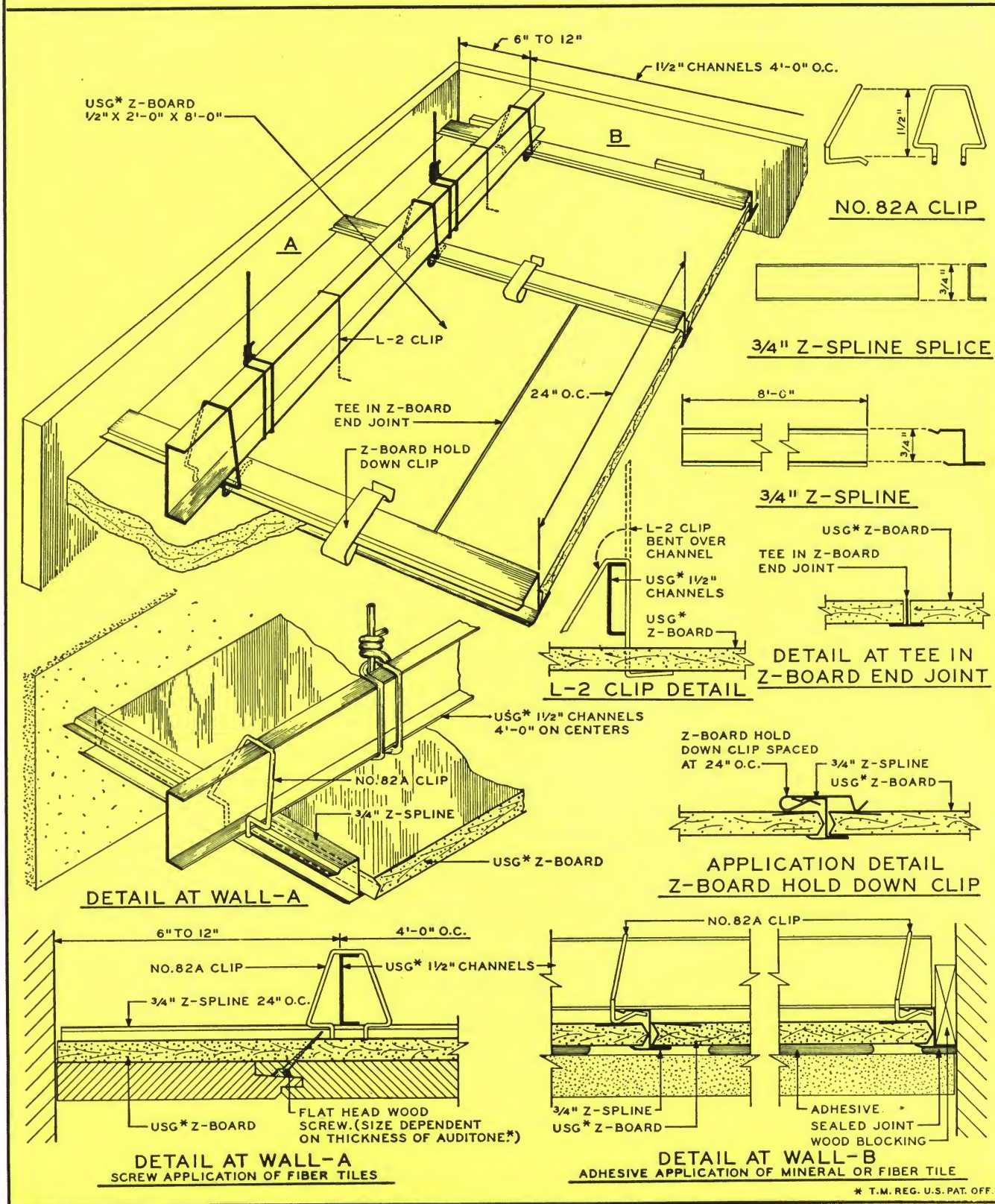
### E-Z-S SUSPENSION SYSTEM



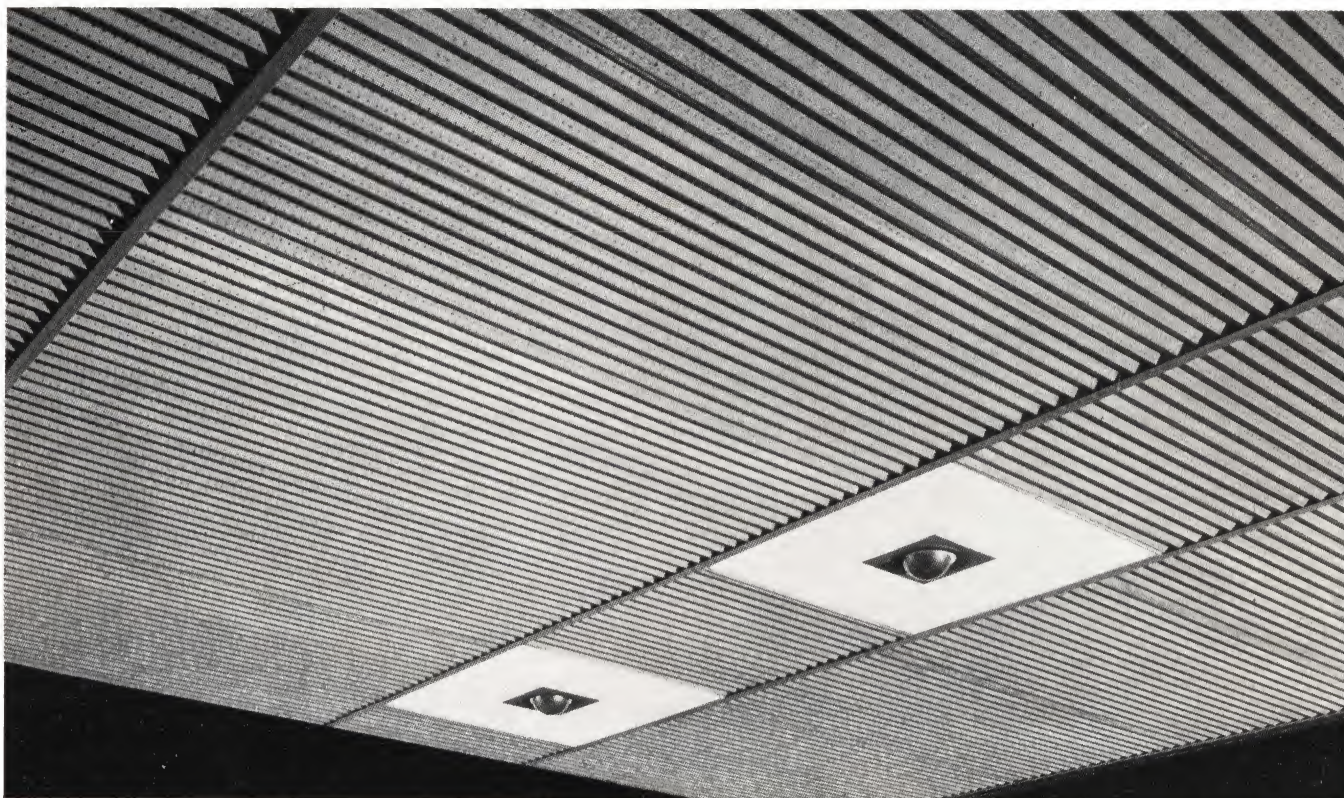
\* T.M. REG. U.S. PAT. OFF.

# USG Z-BOARD-DETAILS

## SUSPENSION USG Z-BOARD ON Z-SPLINE



# CORRUTONE



## DESCRIPTION

CORRUTONE Acoustical Panels are perforated, corrugated units accurately formed from heavily galvanized, bonderized steel, painted two coats of baked-on enamel. Light weight, highly sound absorbent mineral fiber pads are placed on the upper surface of each panel. These pads are incombustible, moisture proof and vermin proof. The assembly has a pleasing appearance, can be economically installed, has a high sound absorption, and can be easily maintained.

### SIZES:

The CORRUTONE steel units are available in 24" x 24" or 24" x 48" sizes. Mineral fiber pads are available in 24" x 24" size. Glass fiber pads may be obtained in rolls of 24" or 48" widths, or 24" x 24" and 24" x 48" sizes.

### APPEARANCE

The CORRUTONE Acoustical Panels, suspended on the E-Z-S system, produce a truly refined surface of strong lines and simple beauty. The rhythmic CORRUTONE units and the finish coated Z-Spline members create a very pleasant panel effect.

### METHOD OF INSTALLATION

The CORRUTONE Panels are suspended on the E-Z-S system. This system can be attached to carrying channels, or directly to bar joist, or wood furring strips. CORRUTONE metal panels are supported on the bottom flanges of the Z-Spline, and a mineral fiber pad is placed on the upper surface of each panel. Panel ends are lapped a minimum of one full corrugation. (See pages 26 and 27 for specifications, pages 13, 14 and 17 for details.)

### ECONOMY

Because of the simplicity of the CORRUTONE system, the entire ceiling can be quickly and economically installed.

Inasmuch as the CORRUTONE Panels can be easily washed or repainted, annual maintenance costs are low.

Because of simplicity of design the CORRUTONE ceiling is almost 100% salvageable. It can be removed and installed in another area.

## FUNCTION AND UTILITY

### Sound Absorption

CORRUTONE has an unusually flat absorption curve and an exceptionally high sound absorption in the low frequencies, where most perforated tiles show poor absorption. (See Sound Absorption Data, Page 23.)

### Maintenance

The smooth painted finish of the CORRUTONE Acoustical Panels resists soiling. If the panels do become dirty they can be easily washed or repainted by maintenance men.

### Washability

Panels may be washed on the ceiling or can be removed, washed and replaced by maintenance men. An entire ceiling can be removed, "laundered" and replaced over-night without disturbing anyone within the area during working hours. Panels can be spot cleaned with a damp sponge.

### Paintability

CORRUTONE can be repeatedly brush or spray painted following normal paint procedures. If necessary, the panels can be removed, painted and replaced when dry.

### Versatility

CORRUTONE Acoustical Panels afford easy accessibility to electrical wiring, plumbing, air conditioning and other services above the ceiling. The system accommodates almost any lighting arrangement, whether fluorescent or incandescent fixtures are used.

### Fire Resistant

The entire CORRUTONE assembly, consisting of metal panels and mineral wool sound absorbing pads is rated "incombustible" under Federal Specifications SS-A-118a test method.

### Thermal Conductivity

CORRUTONE Acoustical pad has a thermal conductivity factor of k-0.26.

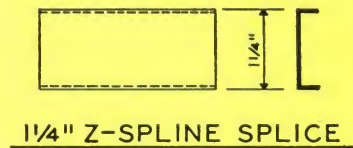
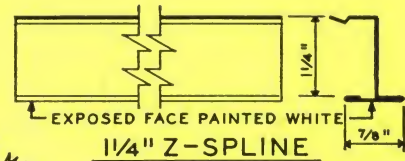
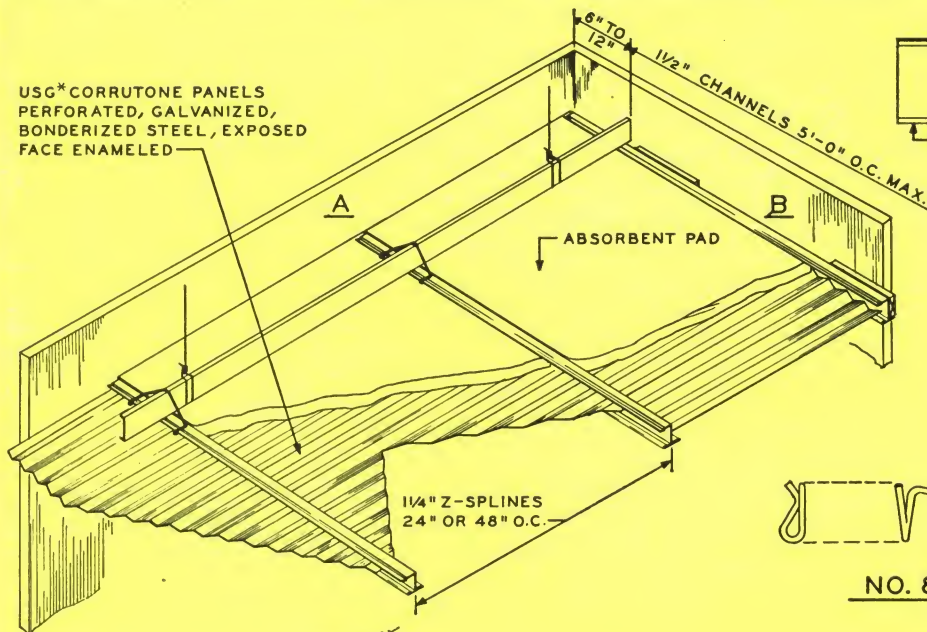
### Limitations

In areas of very high humidity, or where water might impinge against the acoustical surface, consult your USG representative.

# CORRUTONE DETAILS

## MECHANICAL ERECTION OF CORRUTONE PANELS ON E-Z-S SYSTEM

USG\* CORRUTONE PANELS  
PERFORATED, GALVANIZED,  
BONDERIZED STEEL, EXPOSED  
FACE ENAMELED



ABSORBENT PAD

USG\*  
1 1/2" CHANNELS  
5'-0" O.C. MAX.

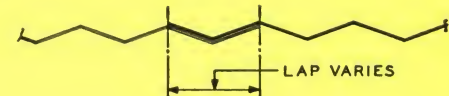
NO. 85 Z-SPLINE CLIP

USG\* CORRUTONE METAL PANEL

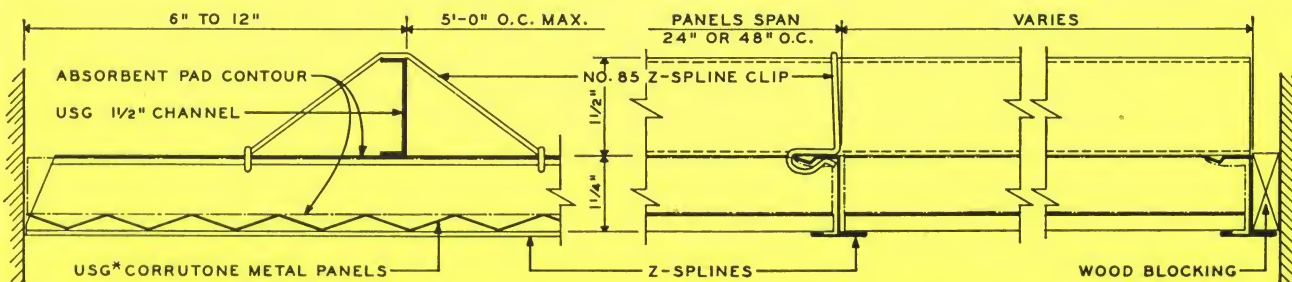
1 1/4" Z-SPLINE

DETAIL AT WALL-A

DETAIL AT WALL-B



LAP DETAIL

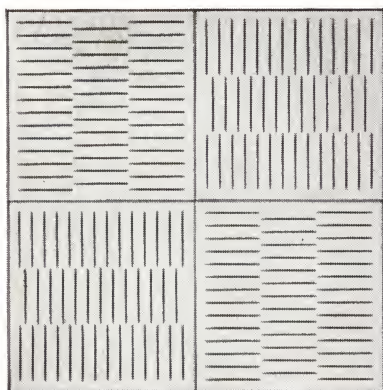


DETAIL AT WALL-A

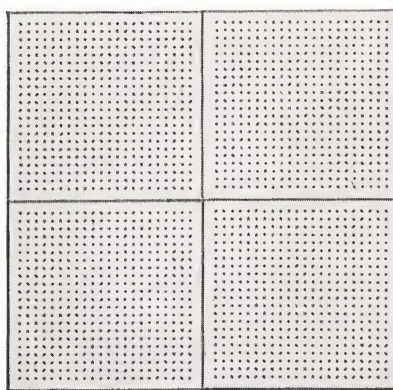
DETAIL AT WALL-B

\* T.M. REG. U.S. PAT. OFF.

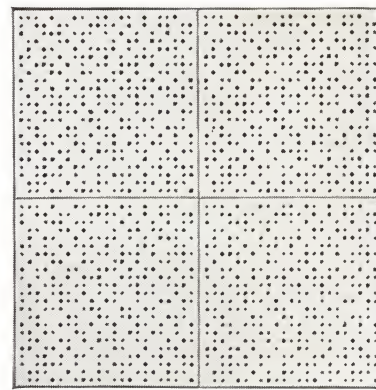
# AUDITONE ACOUSTICAL TILE



**Slotted Auditone**



**Perforated Auditone**



**Random Perforated Auditone**

## SLOTTED AUDITONE ACOUSTICAL TILE

### DESCRIPTION

SLOTTED AUDITONE, wood fiber acoustical tile, is a slotted wood fiber tile designed to give maximum acoustical efficiency with an exclusive, functional appearance. Each unit is finish-painted white at the factory and is available accurately formed, with beveled or tongue and groove edges.

### Sizes

SLOTTED AUDITONE is available in  $\frac{3}{4}$ " and 1" thicknesses and in 12"x12" or 12"x24" sizes. The 12"x24" tongue and groove units are center-scored and slotted to represent two 12"x12" units with the slots parallel to the long edges.

### Light Reflection

SLOTTED AUDITONE has a light reflection of 76% as tested by A.M.A. Laboratories.

## PERFORATED AND RANDOM PERFORATED AUDITONE ACOUSTICAL TILE

### DESCRIPTION

PERFORATED AUDITONE wood fiber acoustical tile is a lightweight, low-cost, wood fiber tile designed and produced to give maximum acoustical efficiency. 484 holes  $\frac{3}{16}$ " in diameter are cleanly drilled into each square foot of tile. PERFORATED AUDITONE is accurately formed, with beveled or tongued and grooved edges.

RANDOM PERFORATED AUDITONE wood fiber acoustical tile is a lightweight, low-cost wood fiber tile, designed to minimize the appearance of individual tile units. 135 holes  $\frac{1}{4}$ " in diameter and 188 holes  $\frac{3}{16}$ " in diameter are cleanly drilled into each square foot of RANDOM PERFORATED AUDITONE.

PERFORATED and RANDOM PERFORATED AUDITONE are finish-painted white at the factory.

### SIZES

PERFORATED AUDITONE is available in  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", or 1" thicknesses and in 12" x 12" or 12" x 24" sizes. The 12" x 24" tongue and groove units are center-scored and perforated to represent two 12" x 12" units.

RANDOM PERFORATED AUDITONE is available in  $\frac{1}{2}$ " or  $\frac{3}{4}$ " thicknesses and in 12" x 12" size.

### LIGHT REFLECTION

PERFORATED AUDITONE wood fiber acoustical tile has a light reflection of 79% as tested by A.M.A. Laboratories.

### FUNCTION AND UTILITY

#### Slotted, Perforated, and Random Perforated Auditone SOUND ABSORPTION

Sound Absorption depends upon the thickness of the tile and the type of mounting. See Technical Data on pages 24 & 25 for sound absorption values.

### EDGE TREATMENT

SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE are made with butt bevel edges for cementing to proper bases without supplementary nailing. SLOTTED and PERFORATED AUDITONE are also made with tongue and groove edges designed to better utilize the economical methods available for stapling, screwing, or nailing wood fiber tile directly to wood joists, studs, or nailing strips. The tongue and groove edges assure level joints and smooth ceiling appearance.

### SCREW APPLICATION TO GYPSUM BOARDS

Tongue and groove SLOTTED and PERFORATED AUDITONE may be screwed directly to  $\frac{1}{2}$ " USG Z-Board or SHEETROCK. (See pages 26, 27 and 28 for specifications, pages 15 and 20 for details.)

### PAINT AND COLOR

The face and bevels of SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE are finish-painted white at the factory.

### MAINTENANCE

SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE can be repeatedly brush or spray painted following normal paint procedures with oil, resin emulsion, casein, or any of the commercial types of paint without loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE wood fiber acoustical tile can be cleaned with putty or paste type wallpaper cleaners.

### RESISTANCE TO SOILING AND BREATHING

The smooth, painted finish of SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE wood fiber acoustical tile resists soiling. SLOTTED and PERFORATED AUDITONE with tongue and groove edges minimize objectionable air travel through the joints when used on suspended nailing strips.

### THERMAL CONDUCTIVITY

SLOTTED and PERFORATED AUDITONE have a k factor of 0.38.

### FIRE RESISTANCE

1. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE, when painted with a standard USG mill finish, are rated "combustible" by Federal Specification SS-A-118a.

2. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE, when mill-finished with USG flame-resistant paint, are rated "slow-burning" under Federal Specification SS-A-118a, Paragraph E-3C.

### LIMITATION

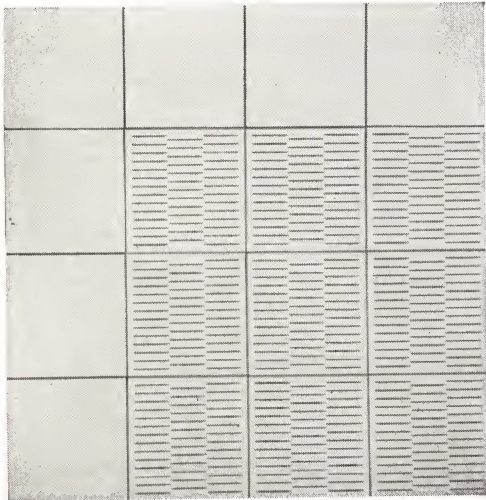
SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE should not be used below wainscot height or where tile will be subjected to severe impact, abrasion, or tampering.

AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.

# SLOTTED AUDITONE ACOUSTICAL TILE

Modern Slotted AUDITONE offers designers almost unlimited scope in ceiling appearance. Below are shown a few suggested patterns.

In addition to high sound absorption, the designs possible with Slotted Auditone can achieve widening, narrowing or directional effects.

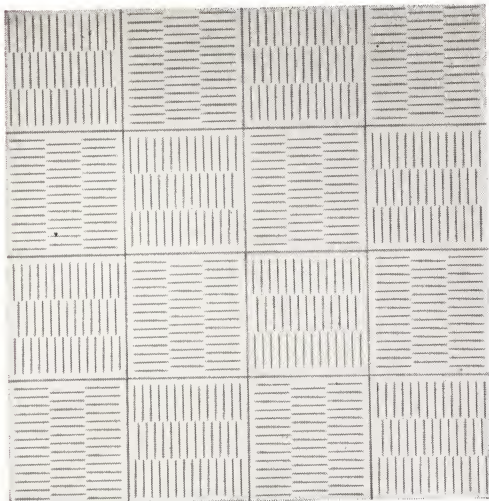


**Square Design**

Using T & G  
or Butt Bevel  
Tile

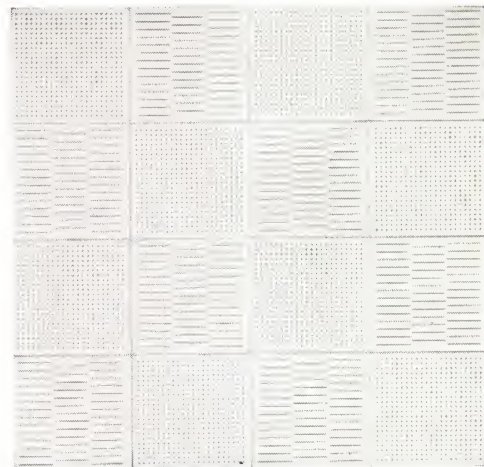


**Ashlar Design**

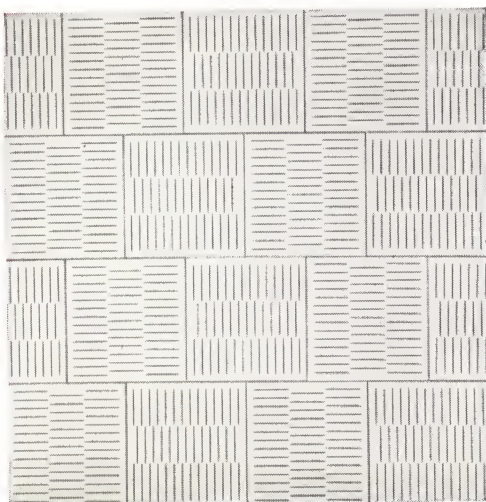


**12"x12" Checkerboard Design**

Using Butt  
Bevel Tile



**12"x12" Combination Design**



**Swedish Modern Design**

Using Butt  
Bevel Tile

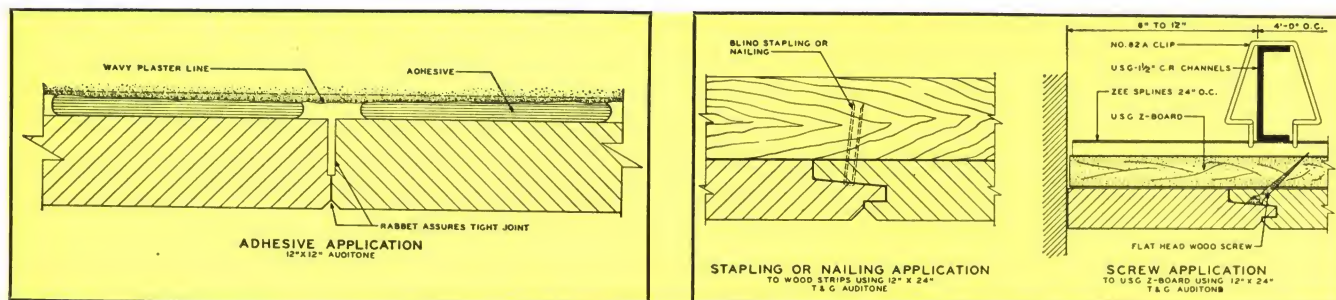


**Diagonal Design**

# AUDITONE — ACOUSTICAL TILE

## INSTALLATION METHODS

### DETAILS OF ADHESIVE, STAPLE & SCREW APPLICATION OF AUDITONE



AUDITONE is installed by approved USG Acoustical Contractors using one of the following methods:

1. Adhesive application of 12"x12" or 12"x24" AUDITONE to an existing ceiling or to a suspended gypsum board base. (See details above.)
2. Stapling, nailing or screwing 12"x24" tongue and groove units to wood strips, studs or joists. (See details above.)
3. Screw application of 12"x24" tongue and groove units to USG Z-Board or SHEETROCK wallboard. (See details above.)

#### ADHESIVE APPLICATION

##### Size and Type of Units

Use  $\frac{1}{2}$ ",  $\frac{3}{4}$ " or 1" thick 12" x 12" or  $\frac{1}{2}$ " x 12" x 24" PERFORATED AUDITONE, wood fiber Acoustical tile;  $\frac{3}{4}$ " or 1" thick 12" x 12" SLOTTED AUDITONE tile;  $\frac{1}{2}$ " or  $\frac{3}{4}$ " thick 12" x 12" RANDOM PERFORATED AUDITONE tile. (See page 26 for specifications.)

##### Bases for Adhesive Application of AUDITONE

Refer to "Bases for Adhesive Application of Acoustone" on page 9.

##### Patterns for SLOTTED and PERFORATED AUDITONE

A variety of ceiling and wall patterns may be obtained by turning the tile to change the direction of slots on adjacent units or groups of units of SLOTTED AUDITONE. Various patterns may also be arranged by using SLOTTED and PERFORATED AUDITONE, wood fiber acoustical tile, in the same area. Diagonal or square patterns with or without plain borders may be used. RANDOM PERFORATED AUDITONE is designed to minimize a pattern effect in ceilings.

#### INSTALLATION BY STAPLING, SCREWING OR NAILING AUDITONE TO WOOD STRIPS, STUDS OR JOISTS.

##### Size and Type of Units

SLOTTED AUDITONE: Use  $\frac{3}{4}$ " or 1" thick 12"x24" tongue and groove units. PERFORATED AUDITONE: Use  $\frac{1}{2}$ ",  $\frac{3}{4}$ " or 1" thick 12"x24" tongue and groove units.

##### Bases for Stapling, Nailing or Screwing

Tongue and groove SLOTTED AUDITONE tile 12"x24" may be nailed or screwed to wood supports or may be stapled ( $\frac{3}{4}$ " thick-

ness only) to wood supports not to exceed 16" on center for the square pattern and 12" on center for the diagonal pattern.  $\frac{3}{4}$ " and 1" thick x 12" x 24" Tongue and Groove PERFORATED AUDITONE tile may be nailed, screwed (and  $\frac{3}{4}$ " may be stapled) to wood supports spaced not to exceed 16" on center for the square pattern and 12" on center for the diagonal pattern.  $\frac{1}{2}$ " x 12" x 24" PERFORATED AUDITONE may be economically stapled, nailed or screwed to wood supports spaced not to exceed 12" on center for either the square or diagonal pattern.

Size of nailing strips	Maximum spacing of supports
1"x2" or 1"x3"	24"
2"x2" or 2"x3"	36"

Where a suspended ceiling is required, a double grillage is recommended, using as main members (2"x2") or (2"x3"), nailing strips spaced as shown above.

Steel Channels not less than  $1\frac{1}{2}$ " deep spaced up to 48" on centers may be used in lieu of the main wood members. The wood nailing strips may be wired to these channels.

Nailing strips (2"x2") or (2"x3") will successfully span 48" if a 1"x2" stiffener strip is nailed to them midway between and parallel to the 48" supports.

Nailing strips may be spaced 16" on center for square pattern and 12" on center for diagonal pattern.

#### AUDITONE SCREWED TO GYPSUM BOARDS.

##### Size and Type of Units

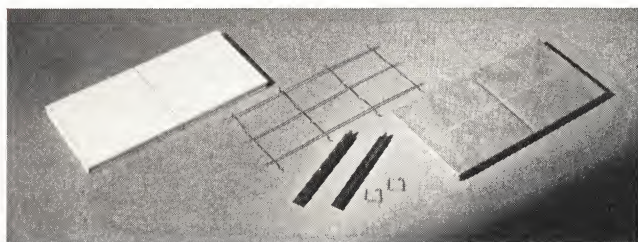
SLOTTED AUDITONE: Use  $\frac{3}{4}$ " or 1" thick 12"x24" tongue and groove units. PERFORATED AUDITONE: Use  $\frac{1}{2}$ ",  $\frac{3}{4}$ " or 1" thick 12"x24" tongue and groove units.

Where an incombustible backing is required, AUDITONE tile may be screwed to USG Z-Board or SHEETROCK which has been nailed directly to wood furring strips or to nailing channels. Space wood furring strips or channels not to exceed 16" on center when using  $\frac{3}{8}$ " thick gypsum boards or 24" on center with  $\frac{1}{2}$ " thick gypsum boards.

Where a mechanical suspended ceiling with an incombustible backing is desired, AUDITONE may be screwed to USG Z-Splines which has been mechanically suspended on Z-Splines. (See pages 26 and 28 for specifications and page 15 for details.)

Only three screws per tile (12"x24" Tongue and Groove AUDITONE) are required to mechanically attach the tile to either  $\frac{1}{2}$ " USG Z-Board or SHEETROCK. Use a  $\frac{7}{8}$ " long No. 4 flat head screw for  $\frac{1}{2}$ " AUDITONE, a 1" long No. 4 flat head screw for  $\frac{3}{4}$ " AUDITONE and a  $1\frac{1}{4}$ " long No. 4 flat head screw for 1" AUDITONE wood fiber acoustical tile.

# PERFATONE\* ACOUSTICAL TILE UNITS



12" x 24" UNITS, CENTER-SCORED TO SIMULATE 12" x 12" UNITS; WIRE GRID SPACER TO SUPPORT MINERAL WOOL PAD; TEE RUNNERS; P-150 CLIPS.

## DESCRIPTION

PERFATONE acoustical units are perforated metal pans (1105 holes per square foot), 12"x24" in size, center-scored to simulate 12"x12" units. Five types of PERFATONE pans are produced.

1. 26 ga. electro-zinc coated steel units with baked-on enamel on the face and back sides.
2. 26 ga. cold rolled steel units with baked-on enamel on the face and back sides.
3. 26 ga. electro-zinc coated steel units with baked-on enamel on the face side only.
4. 3S 1/2 H .025 aluminum units with baked-on enamel on the face and back sides.
5. 3S 1/2 H .025 aluminum units with the bare mill finish.

Enclosed within the metal units are mineral fiber sound-absorbent pads, supported on formed wire mesh which provides an air space between the pad and the metal facing.

The above PERFATONE units are also available unperforated to be used as border tile or for decorative effects.

## FUNCTION AND UTILITY

### Sound Absorption

PERFATONE has a Noise Reduction Coefficient Spec. Range .80 to .90 and a Sound Absorption Coefficient of .98 at 500 cycles per second. (See Technical Data Page 25.)

### Colors

PERFATONE acoustical units are normally painted WHITE, but may be obtained in GRAY-GREEN or BLUE-GRAY colors.

### Paintability and Maintenance

PERFATONE can be repeatedly brush or spray painted following normal paint procedures or may be washed with a damp sponge.

### Fire Resistance

PERFATONE metal units and the mineral wool pads are rated "Incombustible" when tested in accordance with Federal Specifications SS-A-118a.

## LIMITATIONS

In areas of high humidity or where moisture might impinge against the acoustical surface, Aluminum PERFATONE Pans with galvanized fittings, or a different architectural design should be considered.

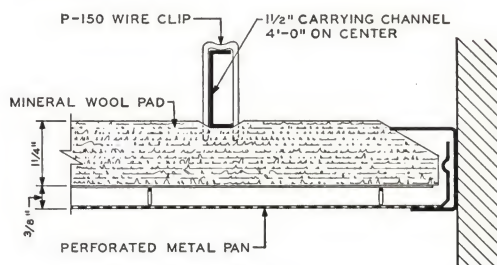
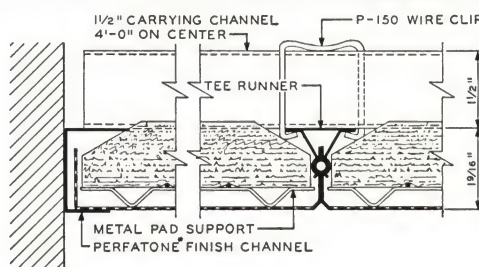
## OTHER USG SOUND CONTROL MATERIALS

**Perforated Asbestos Board**—An "incombustible" acoustical construction consisting of perforated 3/16" asbestos board and mineral fiber pads or blankets. The perforated facing is attached with wood screws or by other means to furring strips. This construction is commonly used in space subject to high humidity, impact or abrasion, and in radio studios. It is in a higher price range than ACOUSTONE "F" or AUDITONE.

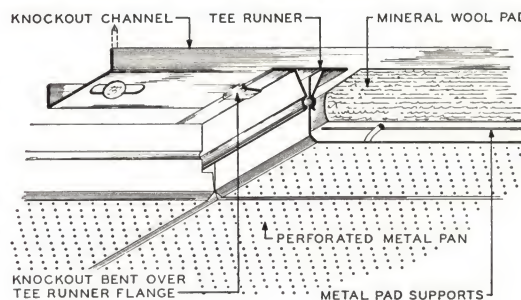
**USG Sound Insulation**—For insulating rooms against extraneous noises. This special USG construction employs patented resilient floor chairs and wall and ceiling resilient clips to support room surfaces, thus furnishing an effective barrier against sound transmission.

\*Trade Mark Reg. U. S. Pat Off.

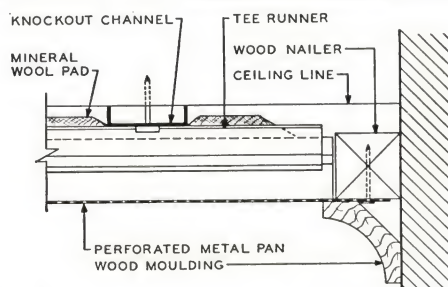
## PERFATONE DETAILS



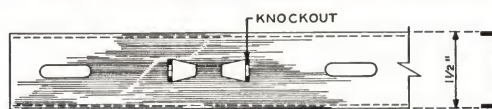
Detail showing metal finishing channel at wall



Detail showing attachment with knockout channel



Detail using wood moulding attachment at wall



Knockout channel



Perfatone finish channel

# DESIGN DATA

MOTIF'D ACOUSTONE TILE <i>Mineral Acoustical Tile</i>	Thickness	Size	Edge	Installation, Kerfing and Back-cut
	$\frac{11}{16}"$ $\frac{7}{8}"$	12"x12"	Square Only	<b>INSTALLATION: Adhesive Method only.</b> All units kerfed and back-cut for fiber splines. Above kerfing is not for mechanical erection. See page 10 for detail. Page 25 for specifications.
	$\frac{7}{8}"$	12"x12"	Square Only	<b>INSTALLATION: Mechanical Suspension— Concealed Z-Spline Method.</b> Kerfed and back-cut for Z-Splines and Steel Flat Splines. See pages 11 and 14 for details. Pages 26 & 27 for specifications.
ACOUSTONE "F" <i>Mineral Acoustical Tile</i>	$\frac{11}{16}"$ $\frac{7}{8}"$	6"x12" 12"x12" 12"x12"	Square or Bevel	<b>INSTALLATION: Adhesive Method.</b> Square edge units kerfed for fiber splines and back-cut. Beveled edge units are not kerfed or back-cut; center-scoring available on 12" x 24" bevel units when specified. Use 12" x 24" units for wall application only. Above kerfing is not for mechanical erection. See page 10 for details. Page 26 for specification.
	$\frac{11}{16}"$ $\frac{7}{8}"$	12"x24"	Square Only	<b>INSTALLATION: Mechanical Suspension— E-Z-S Suspension System.</b> Kerfed and back-cut on 24" edges for Angles or T-Splines. See page 12 for details.
	$\frac{7}{8}"$	12"x24"	Square or Bevel	<b>INSTALLATION: Mechanical Suspension— Concealed Z-Spline Method.</b> Kerfed and back-cut for Z-Splines and Steel Flat Splines. Center-scoring available on beveled edge units when specified. See page 12 for details.
CORRUTONE <i>Perforated, Corrugated Metal Acoustical Panels</i>	$\frac{15}{16}"$ or $\frac{25}{16}"$	24"x24" 24"x48"	Corrugated	<b>INSTALLATION: Mechanical Suspension—E-Z-S System.</b> (See Details page 17 and Specifications on pages 26 & 27.)
SLOTTED AUDITONE <i>Wood Fiber Acoustical Tile</i>	$\frac{3}{4}"$ or 1"	12"x12"	Bevel	<b>Adhesive Method.</b> (See Details page 20 and Specifications on page 26.)
	$\frac{3}{4}"$	12"x24"	Tongue and Groove	<b>Stapling to Wood Framing.</b> (See Details page 20 and Specifications on pages 26 & 27.)
	$\frac{3}{4}"$ 1"	12"x24"	Tongue and Groove	<b>1. Nailing to Wood Framing. 2. Screw Application to Wood Framing, USG Z-Board or Sheetrock Wallboard.</b> (See Details page 20 and Specifications on pages 26, 27 & 28.)
PERFORATED AUDITONE <i>Wood Fiber Acoustical Tile</i>	$\frac{1}{2}"$ , $\frac{3}{4}"$ or 1"	12"x12"	Bevel	<b>Adhesive Method.</b> (See Details page 20 and Specifications on page 26.)
	$\frac{1}{2}"$	12"x24"	Tongue and Groove	
	$\frac{1}{2}"$ $\frac{3}{4}"$	12"x24"	Tongue and Groove	<b>Stapling to Wood Framing.</b> (See Details page 20 and Specifications on pages 26 & 27.)
	$\frac{1}{2}"$ $\frac{3}{4}"$ 1"	12"x24"	Tongue and Groove	<b>1. Nailing to Wood Framing. 2. Screw Application to Wood Framing, USG Z-Board or Sheetrock Wallboard.</b> (See Details page 20 and Specifications on pages 26, 27 & 28.)
RANDOM PERFORATED AUDITONE <i>Wood Fiber Acoustical Tile</i>	$\frac{1}{2}"$ $\frac{3}{4}"$	12"x12"	Bevel	<b>Adhesive Method</b> (See Details page 20 and Specifications on page 26.)
PLAIN AUDITONE <i>Wood Fiber Acoustical Tile</i>	$\frac{1}{2}"$ , $\frac{3}{4}"$ or 1"	12"x12"	Bevel	<b>Adhesive Method.</b> (See Details page 20 and Specifications on page 26.)
	$\frac{1}{2}"$	12"x24"	Tongue and Groove	
	$\frac{1}{2}"$ $\frac{3}{4}"$	12"x24"	Tongue and Groove	<b>Stapling to Wood Framing.</b> (See Details page 20 and Specifications on pages 26 & 27.)
	$\frac{1}{2}"$ $\frac{3}{4}"$ 1"	12"x24"	Tongue and Groove	<b>1. Nailing to Wood Framing. 2. Screw Application to Wood Framing, USG Z-Board or Sheetrock.</b> (See Details page 20 and Specifications on pages 26, 27 & 28.)

# TECHNICAL DATA

## MOTIF'D ACOUSTONE AND ACOUSTONE "F"

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

UNITS	Thickness	Mounting	Coefficients at Cycles Shown						NRC Spec. Range	Weight psf
			125	250	500	1,000	2,000	4,000		
MOTIF'D ACOUSTONE "Striated" Pattern No. 19	3/4"	1	.03	.22	.68	.94	.84	.78	.65-.75	1.16
		7	.69	.73	.71	.76	.84	.87	.70-.80	1.16
ACOUSTONE "F"	3/4"	1	.03	.27	.81	.95	.82	.75	.65-.75	1.40
		7	.56	.76	.73	.82	.92	.89	.75-.85	1.35

Tile tested were painted with a full finish coat of paint.

**MOUNTING NO. 1**—Cemented to Plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings.

**MOUNTING NO. 7**—Attached to Metal Supports on Metal Suspended System.

**LIGHT REFLECTION:**

MOTIF'D ACOUSTONE—WHITE 71%

ACOUSTONE "F"—WHITE 81%

**HEAT CONDUCTIVITY**— $k=0.35$

**FIRE RESISTANCE**—Incombustible by method of Federal Specifications

SS-A-118a

Tests by Official A.M.A. Laboratory.

## CORRUTONE

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

Thickness	Mounting	Coefficients at Cycles Shown						NRC Spec. Range	Weight psf
		125	250	500	1,000	2,000	4,000		
1 5/16" (1)	7	.83	.85	.99	.99	.91	.54	.90-1.00	0.7 Pad
2 5/16" (2)	7	.77	.79	.81	.90	.87	.58	.80-.90	0.08 Pad

**MOUNTING NO. 7**—Attached to Metal Supports on Metal Suspended System.

**HEAT CONDUCTIVITY**— $k=0.26$

(1) 1" Mineral fiber pads

**FIRE RESISTANCE**—"Incombustible"

(2) 2" Glass fiber pads

# TECHNICAL DATA

## SLOTTED AUDITONE TILE

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association										SOURCE: National Bureau of Standards Letter Circular 870, August, 1947														
Thick-ness	Mount-ing	Coefficients at Cycles Shown						NRC Spec. Range	Weight psf	Thick-ness	Mount-ing	Coefficients at Cycles Shown						NRC	Weight psf	(SS-A-118a) Feb. 12, 1948				
		125	250	500	1000	2000	4000					128	256	512	1024	2048	4096			512 cycles	N.R.	Type	Class	
1"	1	.16	.27	.74	.80	.85	.75	.60-.70	1.32	1"	1	.24	.50	.73	.82	.75	.64	.70	1.14	105	5	11	C	
1"	2	.18	.56	.56	.78	.87	.79	.60-.70	1.34	1"	2	.19	.64	.63	.72	.78	.70	.70	1.18	107	5	11	C	
3/4"	1	.14	.32	.71	.76	.77	.65	.55-.65	0.90	3/4"	1	.08	.30	.66	.80	.86	.75	.65	0.79	106	6	11	C	
3/4"	2	.17	.60	.56	.74	.84	.82	.60-.70	0.84															

Tile tested were painted with a full finish coat of paint. **MOUNTING NO. 1**—Cemented to plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings. **MOUNTING NO. 2**—Nailed to wood strips.

#### LIGHT REFLECTION:

**SLOTTED AUDITONE**—WHITE 76%

Tests by Official A.M.A. Laboratories.

**HEAT CONDUCTIVITY:**  $k=0.38$

#### FIRE RESISTANCE:

- "Combustible" when painted with standard USG Mill-Finish.
- Meets Federal Specifications SS-A-118a "Slow Burning" classification under paragraph E-3c when Mill-Painted with USG Flame-Resistant Paint.

### DESIGN DATA

UNITS	EDGE	SLOTTED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	3/4" and 1"	No
Border Tile	Butt	No	3/4" and 1"	No
12" x 24"				
Field Tile	T & G	Yes	3/4" and 1"	Yes
Border Tile	T & G	No	3/4" and 1"	Yes

## PERFORATED AUDITONE TILE

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association									
THICKNESS	MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
1"	1	.16	.38	.77	.86	.75	.61	.65-.75	1.40
1"	2	.19	.49	.73	.92	.77	.59	.75-.85	1.40
¾"	1	.19	.33	.72	.78	.74	.62	.60-.70	1.11
¾"	2	.13	.62	.58	.86	.83	.80	.65-.75	0.95
½"	1	.09	.28	.69	.73	.73	.68	.50-.60	0.76
½"	2	.09	.56	.46	.65	.72	.74	.55-.65	0.78

Tile tested were painted with a full finish coat of paint.

**Mounting No. 1**—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

**Mounting No. 2**—Nailed to wood strips.

#### LIGHT REFLECTION—

**PERFORATED AUDITONE**—White, 79%

Tests by Official A.M.A. Laboratory.

**HEAT CONDUCTIVITY:**  $k=0.38$

#### FIRE RESISTANCE:

- "Combustible" when painted with standard USG Mill-Finish.
- Meets Federal Specification SS-A-118a "Slow Burning" classification under paragraph E-3c when mill-painted with USG Flame-Resistant Paint.

### DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTERSCORED
12" x 12"				
Field Tile	Butt	Yes	1/2", 3/4" & 1"	No
Border Tile	Butt	No	1/2", 3/4" & 1"	No
12" x 24"				
Field Tile	T & G	Yes	1/2", 3/4" & 1"	Yes
Border Tile	T & G	No	1/2", 3/4" & 1"	Yes

# TECHNICAL DATA

## RANDOM PERFORATED AUDITONE TILE

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

THICKNESS	MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
3/4"	1	.13	.37	.72	.68	.75	.59	.55—.65	0.92
1/2"	1	.17	.22	.63	.54	.60	.63	.45—.55	0.70

Tile tested were painted with a full finish coat of paint.

Mounting No. 1—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

HEAT CONDUCTIVITY: k—0.38

#### FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specification SS-A-118a "Slow Burning" classification under paragraph E-3c when mill-painted with USG Flame-Resistant Paint.

### DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTERSCORED
12" x 12"				
Field Tile	Butt	Yes	1/2" & 3/4"	No
Border Tile	Butt	No	1/2" & 3/4"	No

## PERFATONE ACOUSTICAL UNITS

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

MOUNT- ING	THICK- NESS	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
3	2 1/2"	.22	.64	.98	.94	.93	.68	.80-.90	1.07 Pad

Pads were tested in perforated enameled metal pans with pad supports.

Mounting No. 3—Attached to metal supports applied to 1" x 3" wood furring.

LIGHT REFLECTION—White 76%

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

## PERFORATED ASBESTOS BOARD

### SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

MOUNT- ING	THICK- NESS	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
5	1 7/16"	.30	.63	.97	.91	.63	.33	.70-.80	1.21 pad

Pads were tested on Perforated Asbestos Boards.

Perforated Asbestos Board is not painted.

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

# ARCHITECTURAL SPECIFICATIONS

## 1. SCOPE

(Architect will list all areas to receive acoustical treatment.)

## 2. GENERAL PROVISIONS

**2a.** Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in working areas shall be well above freezing.

**2b.** Bases to receive acoustical units adhesively applied shall be sound, dry and free of moisture.

**2c.** The area or room in which acoustical units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc., shall be previously installed and dry.

**2d.** Acoustical units shall not be adhesively installed to roof slabs during extremely hot weather.

## 3. MATERIALS

### 3a. Acoustical Tile Shall Be:

**3a-1 MOTIF'D ACOUSTONE TILE** ( $1\frac{1}{16}$ " or  $\frac{7}{8}$ " thickness x 12" x 12") as manufactured by the U. S. Gypsum Company. MOTIF'D ACOUSTONE design shall be (No. 2, 5, 10, 19, 32-A, 32-B, 33, 36, or 37) and shall be mill painted white or ivory.

**3a-2 ACOUSTONE "F"** ( $1\frac{1}{16}$ " or  $\frac{7}{8}$ " thickness x 12" x 12" or 12" x 24" square or bevel edge) as manufactured by the U. S. Gypsum Company. Tile shall be painted white or ivory.

**3a-3 CORRUTONE** ( $1\frac{1}{16}$ " or  $2\frac{3}{16}$ " thickness 24" x 24" or 24" x 48") as manufactured by the U. S. Gypsum Company. Corrutone Acoustical Panels shall be metal units, perforated, corrugated, and mill painted white. Sound absorbent pads shall be flame proof, mineral fiber pads 24" x 24" or glass fiber pads 24" x 24" or 24" x 48".

**3a-4 SLOTTED AUDITONE TILES** ( $\frac{3}{4}$ " or 1" thickness x 12" x 12" or 12" x 24") as manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

**3a-5 PERFORATED AUDITONE** ( $\frac{1}{2}$ ",  $\frac{3}{4}$ " or 1" x 12" x 12" bevel edge or 12" x 24" tongue and groove edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

**3a-6 RANDOM PERFORATED AUDITONE** ( $\frac{1}{2}$ " or  $\frac{3}{4}$ " x 12" x 12" bevel edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

**3a-7 PERFATONE** metal acoustical units as manufactured for the U. S. Gypsum Company. Metal units shall be 12" x 24" center-scored to simulate 12" x 12" units. (Specify type of PERFATONE and finish color of units.)

Sound absorbent mineral fiber pads shall be 12" x 24".

**3a-8 PERFORATED ASBESTOS BOARD** ( $\frac{3}{16}$ " thickness x 12" x 12", 12" x 24", 24" x 48") manufactured for the U. S. Gypsum Company, natural finish.

Sound absorbent mineral fiber pads shall be 12" x 24".

### 3b. Suspended Gypsum Board Base Shall Be:

**3b-1 USG Z-Board** ( $\frac{1}{2}$ " x 2'-0" x 8'-0") manufactured by the U. S. Gypsum Company. (Caution: No other 2 foot width gypsum board is recommended for the Z-Spline suspension method.)

## 4. ACCESSORIES FOR METHOD OF INSTALLATION AND INSTALLATION SHALL BE:

### 4a. ADHESIVE METHOD (12" x 12" MOTIF'D ACOUSTONE, 12" x 12" ACOUSTONE "F" or 12" x 12" AUDITONE ONLY)

#### 4a-1 Accessories Shall Be:

**4a-1a** The adhesive shall be of a type manufactured expressly for the purpose shall not be water soluble nor contain ingredients that react chemically with paint, nor contain a solvent that has a stronger solvent action on an oil paint than naphtha; it shall contain no alcohol.

**4a-1b** Flat fiber splines. (Used with square edge MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, ONLY) shall be 4" x  $\frac{9}{16}$ " x .027".

#### 4a-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately  $2\frac{1}{2}$ " in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

(Square edge MOTIF'D ACOUSTONE and ACOUSTONE "F" ONLY). Place 4" x  $\frac{9}{16}$ " x .027" Fiber Splines in the kerfs at the corners of the acoustical units.

### 4b. ADHESIVE METHOD ( $\frac{1}{2}$ " x 12" x 24" Tongue and Groove Auditone ONLY).

#### 4b-1 Accessories Shall Be:

**4b-1a** Same as 4a-1a.

#### 4b-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 6 spots of adhesive; place 4 spots of adhesive near the corners of the 12" x 24" units and 2 spots near the edges of the tile at the centerline of the 24" dimension. The adhesive shall be approximately  $2\frac{1}{2}$ " in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

### 4c. CONCEALED Z-SPLINE METHOD ( $\frac{7}{8}$ " x 12" x 12" MOTIF'D ACOUSTONE or $\frac{7}{8}$ " x 12" x 24" ACOUSTONE "F").

#### 4c-1 Accessories Shall Be:

**4c-1a**  $1\frac{1}{2}$ " cold rolled carrying channels manufactured by the U. S. Gypsum Company.

**4c-1b** No. 8 ga. galvanized hanger wires.

**4c-1c**  $\frac{3}{4}$ " Z-Spline manufactured by the U. S. Gypsum Company.

**4c-1d** No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or  $1\frac{1}{2}$ " or 2" carrying channels. (No. 82-A Clip used to attach Z-Splines to  $1\frac{1}{2}$ " channel.)

**4c-1e** No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

**4c-1f** 26 ga. galvanized Flat Steel Splines manufactured by the U. S. Gypsum Company.

**4c-1g** ACOUSTONE, Finish Channel manufactured by the U. S. Gypsum Company.

**4c-1h** Finish Channel Corner Plate manufactured by the U. S. Gypsum Company.

**4c-1j** Spring Steel Spacers.

#### 4c-2 Installation Shall Be:

**4c-2a** with  $1\frac{1}{2}$ " Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on center.  $1\frac{1}{2}$ " carrying channels shall be tied to the hanger wires. The  $1\frac{1}{2}$ " carrying channels shall be hung level and at a maximum spacing of 4'-0" on center.

# ARCHITECTURAL SPECIFICATIONS—CONT.

4c-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled, at a maximum spacing of 4'-0" on center.

4c-2c with Bar Joist Construction. If lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and the Z-Splines, when the Z-Splines are attached to the bar joists.

## INSTALLATION

¾" Z-Splines shall be attached on 12" centers and at right angles to the (metal grillage by 82-A Clip) (bar joists by 85 Clip) (wood framing by No. 90 Clip). ⅞" thick 12" x 24" ACOUSTONE "F" (⅞" x 12" x 12" MOTIF'D ACOUSTONE) shall be supported by inserting the Z-Spline flanges into kerfed edges of the tile. Abutting edges shall be aligned by inserting Flat Steel Splines into the kerfs of the transverse edges of the tile.

ACOUSTONE Finish Channel mouldings shall be provided at the wall surfaces and Spring Steel Spacers placed in the Channel at 12" centers. A Finish Channel Corner Plate shall be used at all exterior corners. Interior corners where Finish Channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

### 4d. E-Z-S SUSPENSION SYSTEM (1½" or ⅞" thick x 12" x 24" ACOUSTONE "F").

#### 4d-1 Accessories Shall Be:

4d-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4d-1b No. 8 ga. galvanized hanger wires.

4d-1c 1¼" Painted Z-Splines manufactured by the U. S. Gypsum Company.

4d-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels).

4d-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4d-1f Electro-galvanized 24-ga. Angle Splines manufactured for the U. S. Gypsum Company.

4d-1g Electro-galvanized 26-ga. T-Splines manufactured for the U. S. Gypsum Company.

#### 4d-2 Installation Shall Be:

4d-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a spacing of a maximum 5'-0" on centers.

4d-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4d-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

## INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" centers and at right angles to the (Metal grillage by No. 82 Clip) (bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). (1½" or ⅞" thick) x 12" x 24" ACOUSTONE "F" mineral acoustical tile shall be placed on top of the lower flanges of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerfs of the abutting or transverse edges of the ACOUSTONE "F".

### 4e CORRUTONE SUSPENSION SYSTEM (1½" or 2½" thick x 24" x 24" or 24" x 48" CORRUTONE Metal Acoustical Panel)

#### 4e-1 Accessories Shall Be:

4e-1a 1½" cold rolled carrying channels manufactured by the

U. S. Gypsum Company.

4e-1b No. 8 ga. galvanized hanger wires.

4e-1c 1¼" Painted Z-Splines manufactured by the U. S. Gypsum Company.

4e-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels.)

4e-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

#### 4e-2 Installation Shall Be:

4e-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum spacing of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 5'-0" on centers.

4e-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4e-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

## INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" or 48" centers and at right angles to the (Metal grillage by No. 82-A Clip) (Bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). 2½" thick x 24" or 24" x 48" CORRUTONE Metal Acoustical Panels shall be placed on top of the lower flanges of the Z-Splines. A mineral fiber pad shall be placed on the upper surface of all CORRUTONE Panels.

### 4f. STAPLING METHOD (½" or ¾" thick x 12" x 24" Tongue and Groove AUDITONE ONLY).

#### 4f-1 Accessories Shall Be:

4f-1a 1" x 3" minimum size wood furring strips (when necessary).

4f-1b Staples shall be ⅝" long, coated.

#### 4f-2 Installation Shall Be:

Wood furring strips shall be installed and leveled (12" on center with ½" thick AUDITONE) (12" or 16" on center with ¾" or 1" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be attached by stapling the advancing tongue edge of the AUDITONE to the wood furring strips or wood framing.

### 4g. NAILING METHOD (½", ¾" or 1" thick x 12" x 24" Tongue and Groove AUDITONE ONLY).

#### 4g-1 Accessories Shall Be:

4g-1a 1" x 3" minimum size wood furring strips (when necessary).

4g-1b Nail shall be:

For ½" AUDITONE—Use 1⅝" blued lath nails.

For ¾" AUDITONE—Use 1¾" blued lath nails.

For 1" AUDITONE—Use 1¼" blued lath nails.

#### 4g-2 Installation Shall Be:

Wood furring strips or wood framing shall be installed and leveled (12" on center with ½" thick AUDITONE), (12" or 16" on center with ¾" or 1" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be installed by nailing the advancing tongue edge of the AUDITONE, wood fiber acoustical tile, to the wood furring strips or wood framing.

### 4h. SCREWING METHOD (½", ¾" or 1" thick x 12" x 24" Tongue and Groove AUDITONE ONLY screwed to wood furring strips, wood framing, or ½" USG Z-Board or Sheetrock).

# ARCHITECTURAL SPECIFICATIONS—CONT.

## 4h-1 Accessories Shall Be:

- 4h-1a 1" x 3" (minimum size) wood furring strips.
- 4h-1b 1/2" USG Z-Board nailed to wood framing.
- 4h-1c 1/2" USG Z-Board suspended on Z-Splines. (See specification 4L).
- 4h-1d 1/2" SHEETROCK board nailed to wood framing.

## 4h-2 Installation Shall Be:

4h-2a Wood furring strips or wood framing shall be installed and leveled (12" on center with 1/2" thick AUDITONE), (with 12" or 16" on center for square pattern), (12" on center for the diagonal pattern).

4h-2b USG Z-Board shall be nailed to wood framing.

4h-2c USG Z-Board shall be suspended on USG Z-Splines. (See architectural specification, 4-L).

The acoustical units shall be installed by screwing the advancing tongue edge of the AUDITONE to the wood framing, 1/2" USG Z-Board or SHEETROCK.

## 4j. SCREWING METHOD (3/16" thick x 12" x 12", 12" x 24" or 24" x 48" Perforated Asbestos Board ONLY).

### 4j-1 Accessories Shall Be:

- 4j-1a 1" x 3" (minimum size) wood furring strips (when necessary).
- 4j-1b 1 1/4" x 12" x 24" mineral wool pad wrapped in flame-proofed membrane.
- 4j-1c Screws shall be No. 6 flat head screws not less than 3/4" long.

### 4j-2 Installation Shall Be:

Perforated Asbestos Board shall be securely attached to wood furring strips spaced 12" on center by fastening screws into the wood furring strips and through the holes of the Perforated Asbestos Board. The mineral fiber pad shall be placed between the wood furring strips and on top of the Perforated Asbestos Board.

## 4k. PERFATONE MECHANICALLY SUSPENDED.

### 4k-1 Accessories Shall Be:

- 4k-1a 1 1/2" cold rolled carrying channels manufactured by the U. S. Gypsum Company.
- 4k-1b No. 8 ga. galvanized hanger wires.
- 4k-1c Tee Runners manufactured for the U. S. Gypsum Company.
- 4k-1d P-150 Wire Clips manufactured by the U. S. Gypsum Company for attaching the Tee Runners to the 1 1/2" carrying channels.
- 4k-1e 1 1/2" Knock-out Channels manufactured by the U. S. Gypsum Company for attaching Tee Runners directly to wood furring strips or wood framing.
- 4k-1f PERFATONE Finish Channel manufactured by the U. S. Gypsum Company.

### 4k-2 Installation Shall Be:

4k-2a with 1 1/2" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on centers. 1 1/2" carrying channels shall be tied to the hanger wires. The 1 1/2" carrying channels shall

be hung level and at a maximum spacing of 4'-0" on centers.

4k-2b with 1 1/2" Knock-out Channels shall be securely attached on 4'-0" centers to wood framing or existing surface.

## INSTALLATION

Tee Runners shall be attached 2'-0" on centers by P-150 Clips to the 1 1/2" carrying channels (to Knock-out Channels by the punched tabs in the Knock-out Channels). PERFATONE, acoustical units, with the mineral fiber pad and pad support included, shall be securely snapped into the Tee Runners. PERFATONE Finish Channel moulding shall be prepared at the wall surfaces.

## 4L Z-SPLINE SUSPENSION OF USG Z-BOARD

### 4L-1 ACCESSORIES SHALL BE:

- 4L-1a 1 1/2" cold rolled carrying channels manufactured by the U. S. Gypsum Company.
- 4L-1b No. 8 Ga. Galvanized hanger wires.
- 4L-1c 3/4" Z-Splines manufactured by the U. S. Gypsum Company.
- 4L-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1 1/2" or 2" carrying channels.
- 4L-1e No. 90 Clip manufactured by the U. S. Gypsum Company for attaching Z-Spline to wood furring strips or wood framing.
- 4L-1f Z-Splines manufactured by the U. S. Gypsum Company to be used in Z-Board end joints to give smooth level surface.
- 4L-1g Z-Board Hold-Down Clip manufactured by the U. S. Gypsum Company shall be snapped over the top flange of the Z-Spline at a maximum of 2'-0" on center to prevent uplift.
- 4L-1h L-2 Clips manufactured by the U. S. Gypsum Company to be used for center support of Z-Board to bar joist or to 1 1/2" Channels.

### 4L-2 Installation Shall Be:

- 4L-2a with 1 1/2" carrying channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on centers. 1 1/2" carrying channels shall be tied to the hanger wires. The 1 1/2" carrying channels shall be hung level and at a maximum spacing of 4'-0" on centers.
- 4L-2b with Wood Furring Strips. Wood Furring Strips of 2" x 3" minimum size shall be attached and leveled at a maximum spacing of 4'-0" on centers.
- 4L-2c with Bar Joist Construction. If the lower chords of the bar joists are not erected level, adequate shims shall be used between the lower chord of the bar joists and Z-Spline when the Z-Splines are attached to the bar joists.

## INSTALLATION

3/4" Z-Splines attached 24" on centers to (Metal grillage by No. 82-A or No. 85 Clips) (bar joists by No. 85 Clips) (Wood framing by No. 90 Clips). USG Z-Board shall be placed on top of the lower flanges of the Z-Splines and a Z-Board Hold Down Clip snapped over top flange of the Z-Spline before advancing board is placed. T-Splines shall be placed in each Z-Board end joint, and an L-2 Clip shall be attached between Z-Splines along the center line of the Z-Board at each intersection of metal framing.

"ACOUSTONE", "CORRUTONE", "AUDITONE", "MOTIF'D", "TEXOLITE", "USG", "RED TOP", "ROCKLATH", "SHEETROCK", "BRIDJOINT", "PERFATONE", and "SABINITE" mentioned in this publication are registered trademarks; "CORRUTONE" is a trademark owned by United States Gypsum and are used by it to distinguish its products. "ACOUSTONE" as used herein identifies the particular mineral acoustical tile; "CORRUTONE" as used herein identifies the particular perforated, corrugated metal acoustical panel; "AUDITONE" as used herein identifies the particular wood fiber acoustical tile; "MOTIF'D" as used herein identifies the particular mineral acoustical tile with decorated surface; "TEXOLITE" as used herein identifies the particular paint; "USG" as used herein identifies the particular sheathing and sound insulation; "RED TOP" as used herein identifies the particular plaster; "SHEETROCK" as used herein identifies the particular gypsum wallboard; "ROCKLATH" as used herein identifies the particular gypsum lath or plaster base; "BRIDJOINT" identifies the particular lathing system; "PERFATONE" as used herein identifies the particular perforated metal acoustical tile; "SABINITE" as used herein identifies the particular acoustical plaster; all manufactured only by United States Gypsum.

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**TECHNICAL INFORMATION**

# ACOUSTICAL PLASTERS



**UNITED STATES GYPSUM**  
The Greatest Name in Building

GENERAL OFFICES—300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

# USG ACOUSTICAL PLASTERS

United States Gypsum Company manufactures three acoustical plasters designed to conform with varied building industry demands. They are particularly effective for sound conditioning, having Noise Reduction Coefficients of .55 to .60. Their medium to high light reflection properties, combined with a variety of finishes, provide excellent acoustical treatment for practically any architectural design.

Low in initial cost, they give more sound absorption per dollar than most other commonly used acoustical materials. Being basically mineral, they are incombustible. In a recent fire test, a floor-ceiling construction consisting of a concrete slab on a cellular steel floor with suspended metal lath ceiling and  $\frac{5}{8}$ " gypsum-perlite basecoat (100:2; 100:3) with  $\frac{1}{2}$ " Acoustical Plaster finish, endured in excess of 5 hours, easily providing a 4 hour rating.

## SABINITE\* Acoustical Plaster

### Description

For application over a properly prepared gypsum basecoat. Formulated for hand application, it may be finished with trowel or float, and requires the addition of water only. Any good plaster craftsman can apply.

**Sound Absorption**—Noise reduction coefficient of .60 with Trowel Finish; .55 for float finish. (See table for individual frequencies.)

**Colors**—Available in Oyster White, Antique Ivory, Spanish Buff, Caenstone, and Colonial Cream.

**Light Reflection**—Laboratory tests of Oyster White indicate light reflection of .53 for Trowel Finish and .51 for Float Finish.

**Heat Insulation**—SABINITE has a "K" value of .59.

**Maintenance**—SABINITE trowel or float finish may be

cleaned with a vacuum cleaner, using hose and brush attachment. SABINITE trowel finish may also be cleaned with a putty type wallpaper cleaner.

**Painting**—SABINITE may be redecorated with TEXOLITE\* paint (Standard or Imperial). Apply according to U.S.G. specification for painting SABINITE. Tests show no loss in sound absorption after two spray coats.

### Limitations

1. Designed for use on ceilings and areas not exposed to rough usage.
2. SABINITE Acoustical Plaster should not be used where exposed to excessive moisture, nor on exterior areas where exposed to the elements.
3. SABINITE is not recommended for use over radiant heating panels.

## HI-LITE\* Acoustical Plaster

### Description

HI-LITE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats.

Formulated for hand application, it develops its maximum acoustical efficiency through mechanical opening of the surface, and therefore must be stippled or stipple-perforated. Requires the addition of water only.

**Sound Absorption**—Noise reduction coefficient of .60 when stippled or stipple-perforated. (See table for individual frequencies.)

**Colors**—Available in white only.

**High Light Reflection**—Light reflection is in excess of .75 for both stippled and stipple-perforated finish. (See table.)

**Heat Insulation**—HI-LITE Acoustical Plaster has a "K" value of .50.

**Maintenance**—HI-LITE Acoustical Plaster may be cleaned with a vacuum cleaner using hose and brush attachments.

**Highly Paintable**—May be redecorated with TEXOLITE paint (Standard or Imperial). Tests by a nationally recognized laboratory showed HI-LITE Acoustical Plaster with a stipple-perforated finish had no loss in sound absorption after 4 spray coats of Imperial TEXOLITE paint were applied.

**Durability**—When set and dry HI-LITE Acoustical Plaster has an exceptionally hard, tough surface, not easily damaged.

**Adaptability**—HI-LITE, when applied to a portland cement-lime basecoat, may be used in areas of moderately high humidity such as swimming pools.

### Limitations

1. HI-LITE must be machine mixed to develop proper density.
2. Designed for use on ceilings or wall areas not exposed to abnormally rough usage.
3. When perforated, a special perforator with rust resistant prongs should be used.
4. HI-LITE is not recommended for use over radiant heating panels.

"SABINITE", "HI-LITE", "AUDICOTE", "TEXOLITE", "ROCKLATH", "RED TOP", are trademarks owned and/or registered by the United States Gypsum and used by it to distinguish its products. "SABINITE", "HI-LITE" and "AUDICOTE" identify the particular acoustical plaster; "TEXOLITE" identifies the particular interior paint; "ROCKLATH" identifies the particular plaster base; "RED TOP" identifies the particular plaster; all manufactured by United States Gypsum.

# AUDICOTE Acoustical Plaster

## Description

AUDICOTE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats, or direct to monolithic concrete or other surfaces that are clean, firm, and free of water soluble paints, grease or oily film. Although developed primarily for machine application it may also be applied by hand. In addition to a fine or medium machine textured finish, it may be stippled, stipple-perforated, or floated. AUDICOTE attains its hardness through drying, and develops its acoustical properties by fissuring. Requires the addition of water only. Particularly adaptable to large unbroken ceiling areas where machine application will result in a uniform textured finish.

## Sound Absorption

Noise Reduction Coefficient of .55 for machine applied finish; .60 for machine applied. (See table for individual frequencies.)

## Colors

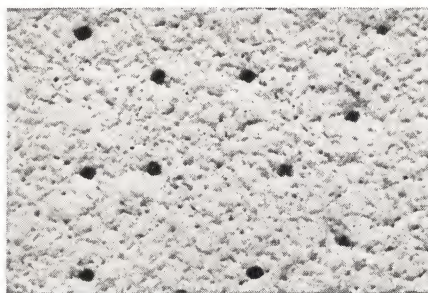
Available in Satin White only.

## Light Reflection

Either machine textured finish or hand applied finish



SABINITE Trowel Finish



HI-LITE Stipple-Perforated



AUDICOTE Machine-Textured Finish

have a light reflection of .58.

## Heat Insulation

AUDICOTE Acoustical Plaster has a "K" value of .50.

## Paintable

Tests show no loss on sound absorption after 2 spray coats of TEXOLITE (Standard or Imperial) applied to U.S.G. specification for painting acoustical plasters.

## Maintenance

May be spray painted or refinished with a spray applied coat of AUDICOTE.

## Limitations

1. AUDICOTE is designed for use on ceiling and wall areas which will not be subject to abrasion or rough usage.
2. While a rust inhibitor is used in AUDICOTE, it is recommended that use of unprotected steel in the surface of monolithic concrete be minimized to avoid rust spotting of the finish.
3. AUDICOTE is not recommended for use over radiant heating panels.

## Technical Data

ACOUSTICAL PLASTER	FINISH	THICKNESS AND BASE	SOUND ABSORPTION							LIGHT REFLECTANCE PERCENT	HEAT INSULATION "K" FACTOR
			FREQUENCY								
			125	250	500	1000	2000	4000	NRC		
SABINITE	Trowel	One half inch applied to a Gypsum Plaster Basecoat on Metal Lath.	.54	.27	.47	.76	.99	.88	.60	.53	.59
	Float		.49	.32	.42	.66	.83	.81	.55	.51	
HI-LITE	Stippled		.41	.26	.59	.78	.84	.65	.60	.80	.50
	Stipple- Perforated		.20	.24	.50	.76	.83	.76	.60	.77	
AUDICOTE	Darbid		.64	.29	.55	.83	.80	.80	.60	.58	.50
	Machine Textured		.59	.28	.51	.73	.77	.77	.55		

Sound absorption and light reflectance from tests at a recognized independent laboratory. Heat insulation data from tests at USG laboratory.

## SPECIFICATIONS

The following short form specification may be used in the general plastering specifications.

### GENERAL PROVISIONS

General provisions for plastering apply to acoustical plaster application.

### SCOPE

As indicated on drawings, all walls and ceilings shall be finished as herein described.

### MATERIALS

Acoustical plaster shall be (choose one)

1. SABINITE Acoustical Plaster (Trowel Finish) (Float Finish).
2. HI-LITE Acoustical Plaster (Stippled Finish) (Stipple-Perforated Finish).

3. AUDICOTE Acoustical Plaster (Machine Textured Finish) (Stipple Finish) as manufactured by the United States Gypsum Company. Color shall be as selected by the architect (SABINITE Only).

### MIXING AND APPLICATION

Mixing and application of acoustical plaster and basecoat plaster shall be in strict accordance with the manufacturer's latest printed directions which are hereby made a part of this specification.

### Related inclusion (for concrete specifications):

Where AUDICOTE is specified to be applied direct to monolithic concrete low reinforcing bar chair legs shall be galvanized with ends turned up and high reinforcing bar chair legs shall be dipped in rust inhibitive paint and other raw steel in the exposed surface of the concrete shall be held to a minimum.

# USG ACOUSTICAL PLASTER

## Mixing and Application Directions

### SABINITE ACOUSTICAL PLASTER—

#### Trowel or Float Finish

##### Mixing

**Machine mixing recommended.** Put 22 quarts clean water in mixer for each bag of SABINITE. Add SABINITE to water and mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (usually 3 to 5 minutes, depending on speed of mixer). For hand mixing, place SABINITE in one end of mixing box. For each bag of SABINITE add 23 qts. of clean water in other end. Hoe SABINITE into water. The mix will appear dry, but do not add more water. Mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (approximately 8-10 minutes per 2-bag batch).

##### Application

SABINITE shall be applied in 2 coats to a uniform total thickness of  $\frac{1}{2}$ " over a basecoat of RED TOP gypsum plaster. A full scratch and brown coat are required over metal lath, ROCKLATH\* plaster base, and masonry bases (excluding monolithic concrete) to provide proper rigidity, strength, and a solid base for the acoustical plaster.

Apply the first coat of SABINITE  $\frac{1}{4}$ " thick by scratching in and doubling back over a set semi-green gypsum plaster basecoat that is level and cross raked. If basecoat is dry, spray lightly to reduce suction. Allow to set and partially dry (at least overnight) before applying finish coat.

Apply SABINITE finish coat to a thickness of  $\frac{1}{4}$ " scratching in and doubling back, over a set, partially dry first coat. Bring total thickness to  $\frac{1}{2}$ ". Leave surface uniformly level and free of trowel marks, working from wet edge. Finish areas in one operation to avoid joinings. Trowel Finish—after gloss leaves surface and surface is firm, trowel lightly to a uniform texture. *Do not use water during troweling.* Float Finish—float second coat 5 to 10 minutes after gloss has left surface and surface is firm. Use a shingle, cork, or carpet float. *Do not use water in floating.*

### HI-LITE ACOUSTICAL PLASTER

#### Stipple or Stipple-Perforated Finish

##### Mixing

USG HI-LITE Acoustical Plaster mixing requires the addition of clean water only. Machine mixing is required.

**Machine Mixing:** Use approximately 33 quarts of water per bag of plaster. Add HI-LITE Acoustical Plaster to water and mix until MORTAR WEIGHS 15 TO 17 POUNDS NET PER 12-QUART PAIL. (Approximately 10 to 15 minutes mixing time is required depending on speed of mixer.)

Do not retemper or mix one batch with another. Keep all tools and equipment clean. Mix no more than can be used in one hour.

##### Application

USG HI-LITE Acoustical Plaster shall be applied in two coats to a uniform thickness of  $\frac{1}{2}$ ". A full scratch and brown coat of gypsum plaster or portland cement plaster that has been cross-raked is required over metal lath, gypsum lath and masonry bases (except monolithic concrete) to provide proper rigidity, strength and a solid base for the acoustical plaster.

**First Coat:** Apply the first coat of HI-LITE Acoustical Plaster  $\frac{3}{8}$ " thick, by scratching in and doubling back over a set and dry, partially dry or semi-green basecoat. Darby lightly to a level surface. Allow to set and dry fairly well (at least overnight) before applying finish coat.

**Finish Coat:** Apply the finish coat  $\frac{1}{8}$ " thick, to a set and fairly dry HI-LITE first coat, scratching in and doubling back, leaving surface free of trowel marks. Work from a wet edge to avoid joinings.

When surface gloss has disappeared or surface is crisp and hard enough to give clean perforations, stipple the surface with a rice root stippling brush to a uniform texture.

To obtain a stipple-perforated finish, perforate the surface not sooner than 30 minutes after stippling but before set (or when surface is hard enough to give clean perforations without tearing). Use perforator as furnished by the U.S. Gypsum Company. Perforations should number approximately 500 per square foot and should be at least  $3/16$ " deep.

### RED TOP AUDICOTE

#### Acoustical Plaster

##### Surface Preparation

AUDICOTE will bond to any surface that is firm, clean, and free from oily film or water soluble materials. Water soluble or oily material must be removed before application of first coat of AUDICOTE. Loose paint, rust or oil must be removed before applying AUDICOTE to metal surfaces which are free from excessive vibration or deflection. In reinforced concrete slabs, ends of bar chairs shall be treated to prevent rusting and other raw steel in the exposed surfaces shall be held to a minimum. (See related inclusion of specifications for concrete.) For best results, base coats of gypsum plaster or portland cement plaster should be semi-green to dry.

##### MIXING

**Machine Mixing**—Machine mixing is recommended. Add AUDICOTE to the water. Use approximately 55 quarts of clean water per bag for the first coat of acoustical plaster. For the finish coat more water will be required, 70 to 90 quarts, depending upon the type of machine used for application and the degree of texture desired. An increase in the amount of water used per bag will give a finer texture when machine applied. If hand application of the finish coat is required use approximately 55 quarts of water per bag for the finish coat. Each bag will cover 6 to 7 square yards  $\frac{1}{2}$ " thick. Mix for a minimum of five minutes in the mixer to develop the proper consistency.

**Hand Mixing**—If hand mixing is required the material must be hoed sufficiently to develop even consistency free of humps.

**Machine Application**—The first coat of acoustical plaster should be applied to a thickness of  $\frac{3}{8}$ ". Level with a darby and point up with a trowel, if necessary, to provide a smooth and level base for the finish coat. Allow to dry before applying finish coat. Apply finish coat  $\frac{1}{8}$ " thick.

**Hand Application**—The first coat of acoustical plaster should be applied to a thickness of  $\frac{3}{8}$ ". Level with darby to provide a smooth and level base for the finish coat. Allow to dry before applying finish coat. Finish coat should be applied to a  $\frac{1}{8}$ " thickness and darbied. After finish coat has taken up sufficiently, it may be stippled, stipple-perforated or floated to produce the desired finish.

##### Caution

Allow RED TOP AUDICOTE Acoustical Plaster to dry naturally, furnishing proper heat and ventilation in slow drying weather. Avoid fast or uneven drying which would result in excessive fissuring. Large fissures should be filled and leveled prior to application of the finish coat.

## Directions for Painting USG Acoustical Plasters

#### Surface Preparation

Remove all loose dirt or dust by use of a vacuum cleaner with hose and brush attachment.

**Paint:** Should be water-thinned. TEXOLITE\* (Standard or Imperial) is recommended. First coat—mix one part TEXOLITE paste to one part water by volume. Second coat if required—mix one part TEXOLITE paste to two parts water by volume.

Spray on with any gun with a medium fine spray. DeVilbiss

spray gun, type MBD, with a No. 30 nozzle or equivalent is recommended. Use 30 to 40 lbs. pressure in the gun and 20 to 30 lbs. on the paint.

Hold nozzle 14 to 18 in. away from work. Use a slow, uniform motion. Cover surface in one pass. Do not pass over same area several times as this builds up paint unnecessarily.

Allow at least overnight drying between coats. If weather is extremely humid, allow additional drying as necessary.

**NOTE:** Brush painting is not recommended.

## USG ACOUSTICAL PLASTER

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